

# HAM RADIO OUTLET®

COMMUNICATIONS EQUIPMENT CATALOG

SPRING/SUMMER 2020

WORLDWIDE DISTRIBUTION

EXTREME PERFORMANCE  
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# YAESU

## FT3DR

- DUAL BAND • TOUCHSCREEN
- COLOR DISPLAY • 1200/9600 APRS
- AUTO MODE SELECT • BUILT-IN GPS

Page 21



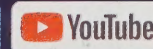
## FTDX101MP

- SDR TECHNOLOGY • TOUCHSCREEN
- DUAL RECEIVERS • WATERFALL DISPLAY
- 32 BIT DSP • 200W • ACTIVE BAND MONITOR

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# ALINCO

## DJ-MD5TGP RoHS

DMR DIGITAL/ANALOG DUAL BAND

### VHF/UHF 5W DMR Dual Mode Tier I/ II Handheld Transceiver

Alinco's DJ-MD5TGP features 5W DMR Tier I/II Technology and is the newest addition to our DMR family of handheld dual band VHF/UHF transceivers. Part 90 certified for business and amateur communication, the DJ-MD5TGP features GPS, color display and 4000 channels of memory as well as a IP54 rated polycarbonate body. The DJ-MD5TGP utilizes DVS1's AMBE+2 vocoder technology providing the best possible audio performance at an affordable cost.

#### FEATURING

- DMR Tier I and Tier II
- 1.77 inch TFT color LCD
- VFO/MR Switch
- Output power selectable (5W/2.5W/1W/0.2W)
- 4000 channel memory
- GPS Built-in
- APRS Support (Digital Mode only)
- Individual/Group/All call (Digital mode)
- CTCSS/DCS/DTMF/2Tone/5Tone encode and decode (Analog mode)
- 1700mAh Li-ion battery
- FCC Part 90 Certified



#### SPECIFICATIONS

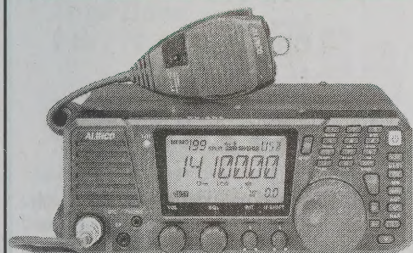
- Frequency Range: 136-174MHz/400-480MHz
- Channel Capacity: 4000ch
- Channel Spacing: 25KHz(Analog)/12.5KHz(Digital/Analog)
- Operating Voltage: DC7.4V
- Frequency Stability:  $\pm 2.5$ ppm
- Temperature range: -20~+55?(Operating)/+5~+40?(Charging)
- Dimensions(WxHxD): 59x118x40mm(with battery pack)
- Weight: 256g(with battery pack and antenna)
- Power Output: 5W/2.5W/1W/0.2W
- Modulation(Digital): 7K60FXD/7K60FXE
- Modulation(Analog): 16K0F3E/11K0F3E

*\* Specifications subject to change without notice*



Standard Accessories

## Base Transceivers



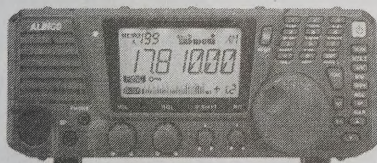
### All-Mode TRANSCEIVER Analog / Digital Hybrid

**DX-SR9T - \$Call**

**150 kHz - 30 MHz**

This hybrid, stand-alone analog and digital SDR transceiver covers all shortwave and HF amateur bands allocated to North America. Covers 160 m to 10 m amateur bands including 5.3 MHz in SSB, CW, AM, FM and IQ output modes. Output power is 100 W SSB/CW and FM, 40 W in AM with low and super-low power settings for QRP operation. In addition, the general coverage receiver covers 135 kHz to 30 MHz in all modes.

- Front panel separation.
- Large LCD display.
- Front facing speaker.
- Auto-keyer.
- Simple operating commands.
- Download free SDR software from Alinco.com. Programming cable ERW-4C or ERW-7 required for SDR operation.



**SSB / CW / AM / FM**

### All Mode TRANSCEIVER

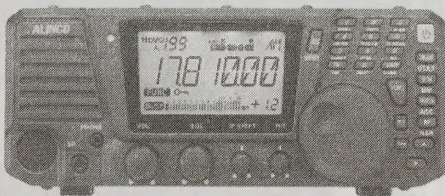
**DX-SR8T - \$Call**

**150 kHz - 30 MHz**

The DX-SR8T covers 160 m to 10 m amateur bands including 5.3 MHz in SSB, CW, AM and FM modes. Output power is 100 W SSB / CW / FM and 40 W in AM with low and super-low power settings for QRP operation. General coverage receiver of all modes 135 kHz to 30 MHz. Receiver features are similar to the DX-R8T.

**Extended  
Warranties  
Available.  
See page 54.**

## Desktop Receiver



### All Mode RECEIVER

**DX-R8T - \$Call**

**150 kHz - 30 MHz  
SSB / CW / AM / FM / IQ**

Monitor SWL signals from aviation, navigation and data sources.

- IQ signal output allows use of third-party SDR software.
- Front and rear jacks.
- Direct frequency input to the dual VFO system.
- Detachable front control panel mounting options.
- Large LCD display.
- Front speaker and 2 W audio output.
- Rugged die cast chassis.
- Narrow ceramic filters (AM 2.4 kHz, SSB 1 kHz) and 0.5 kHz audio filtering for CW.
- 4-level RF amp / attenuator.
- IF shift and RIT.
- Noise blanker.
- 3 banks / 600 memory channels.
- Two sets of programmed search pairs and varieties of scanning modes.
- Auto power off, sleep timer, dial and key locks, RX indicator illumination.
- Computer utility software to manage settings and edit memories.
- Receive circuitry: Double conversion superheterodyne.
- Receiver current drain: 1.0 A.
- RIT range:  $\pm 1.2$  kHz.
- IF Frequency: 1st 71.75 MHz, 2nd 455 kHz.
- Spurious and image rejection ratio: more than 70 dB.
- Antenna impedance: 50 ohm unbalanced.
- Frequency stability:  $\pm 1$  ppm.
- Power required: 13.8 VDC  $\pm 15\%$ .

**EDS-17**

Front panel remote kit optional. 5 m cable, front panel bracket, unit cover and hardware.

## Handheld Receiver

### Wide Band Receiver

**DJ-X11T**

**\$Call - HRO Price**

Get the power of a desktop receiver in a handheld!! Features: 2 VFO simultaneous receive; covers 0.05 to 1299.995 MHz\* in all modes; 1200 memories; sub-band coverage VHF 118-171 MHz and 336 to 470 MHz in AM / NFM; IQ signal can be used with 3rd party software and discriminator output; easy-to-use twin dials; selectable tuning steps; 3 selectable scan speeds; freeware to operate as a software defined radio.

\*Cell band blocked.



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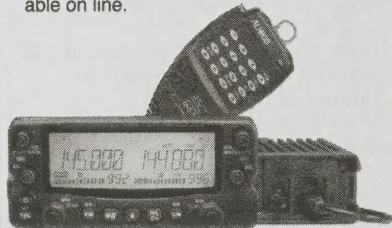
## Dual Band Mobile



### Dual Band 2 m / 70 cm

**DR-735T - \$Call**

- 144 MHz / 440 MHz FM transceiver.
- TX 144-148 MHz / 430-450 MHz.
- RX 108-174 MHz (AM / FM) 400-480 MHz (FM).
- Receiver double conversion.
- Civil aviation and utility receive.
- 1000 channel programmable memory.
- Full duplex / X-band repeat.
- 50 / 20 / 5 W power output on both bands.
- Huge alphanumeric LCD display.
- RGB backlight with choice of eight colors.
- Set different display color for different functions and store in memory.
- Independent 2 meter / 70 cm dials / volume / squelch knobs.
- Removable front control head. Mount remotely or inverted for optimal speaker placement.
- Wide variety of scanning features.
- Computer programmable. Software available on line.



**Extended Warranties  
Available**

## Alinco Mobile Specifications

Model	Primary Use	Frequency Range	Power	Current Drain Xmit	Current Drain Rec	Power Out	Memory Channels	Ant Z ohms	Mike Z ohms	Sensitivity at 12 dB	Height in	Width in	Depth in	Weight lbs
DR-135TMKIII#	Mobile	2 m	13.8 VDC	11 A	400 mA	5/10/50 W	100	50	600	<16 $\mu$ V	1.57	5.58	6.83	2.2
DR-235TMKIII#	Mobile	222-225 MHz	13.8 VDC	8 A	400 mA	5/10/25 W	100	50	600	<16 $\mu$ V	1.57	5.58	6.83	2.2
DR-435TMKIII#	Mobile	430-450 MHz	13.8 VDC	10 A	400 mA	5/10/35 W	100	50	600	<16 $\mu$ V	1.57	5.58	6.83	2.2
DR-06T	Mobile	50-53.995 MHz	13.8 VDC	11 A	600 mA	50 W	100	50	600	<25 $\mu$ V	1.57	5.58	6.83	2.2
DR-735T	Mobile	2 m / 70 cm	13.8 VDC	12 A		5/20/50 W	1000	50	600		2.3	5.8	7.4	2.8
DRB185TH	Mobile	2 m	13.8 VDC	8 A / 20 A	500 mA	5 / 65-85	500	50	600	<25 $\mu$ V	1.7	6.44	7.21	3.3

#TXCO with  $\pm 2.5$ ppm frequency stability.

## Single Band Mobiles



### DR-B185TH

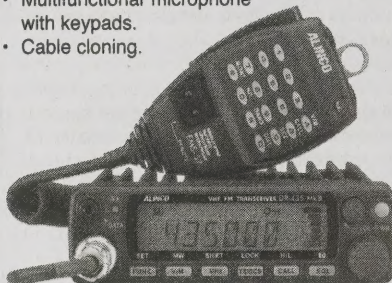
### 2 Meters / 85 Watts

\$Call - HRO Price

The compact DR-B185 is loaded with high tech features: high stability PLL synthesizer, 85 W max output, 7-digit alphanumeric display, and

a wide variety of scanning features. Yet the operation is intuitive and simple.

- TX 144-147.995 MHz; RX 136-173.995 MHz.
- Scanning functions include DCS / CTCSS / priority / group and timer / busy modes.
- Wide and narrow FM modes
- 39 tone CTCSS / DCS / 2-tone encode and decode.
- High / low power setting.
- Offset direction and frequency variable.
- Keypad lockout / reverse function.
- Alphanumeric tag / display dimmer.
- Automatic illumination brightness.
- Time out timer.
- BCLO and auto power off.
- Tone-burst tones / auto-dialer.
- DTMF TX speed, pause and monitoring features.
- S-METER squelch.
- Multifunctional microphone with keypads.
- Cable cloning.



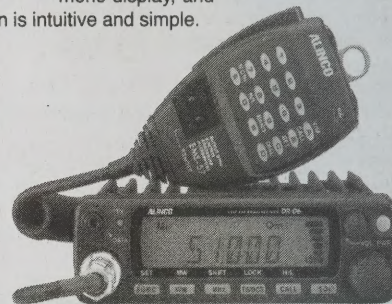
### DR-135TMKIII - 2 Meter

### DR-435TMKIII - 440 MHz

### DR-235TMKIII - 220 MHz

\$Call - HRO Prices

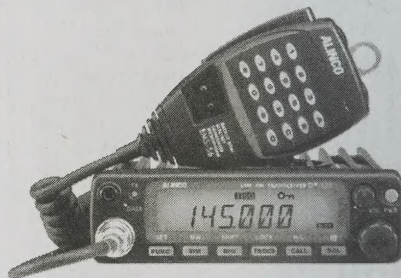
Features a unique multifunction backlit microphone with direct frequency input. The 144 MHz, 220 MHz, and 440 MHz models accept optional EJ-41U internal TNC or EJ-47U digital voice module. The MKIII TCXO supports a specification of  $\pm 2.5$  ppm frequency stability.



### DR-06T 6 Meters

\$Call - HRO Prices

Catch the exciting world of the 6 m band with the DR-06T. Covering 50-53.995 MHz with an output of 50 W, it has convenient scan features, a variety of selective calling tones, theft alarm, ignition key on/off, direct frequency input, and controls from the EMS57 key pad microphone.



### DR-135TMKIII - 2 Meters

\$Call - HRO Price

2 meter FM and Airband receive (AM). Ignition key power control, theft alarm, 7 place alphanumeric display, front panel data input, optional internal packet module to use with APRS®, rear panel serial port connection. 100 memories, 10 autodial memories.

# HTs

## Dual Band HT

Dual Band  
2 m / 70 cm

NEW!

### DJ-VX50T

\$Call - HRO Price

The DJ-VX50T has a compact IP67 dust/water proof body. CTCSS, DTMF, DCS are standard, along with a variety of tone bursts for repeater access or selective calling. Convenience features include direct frequency input, alphanumeric channel labels and 200 memory channels that can each store operating parameters. In addition, DJ-VX50T sports VHF AM aircraft, FM broadcast and NOAA Weather Channel receiver. ALI-Ion battery pack and a stand charger are included.



## Tri-Band HT

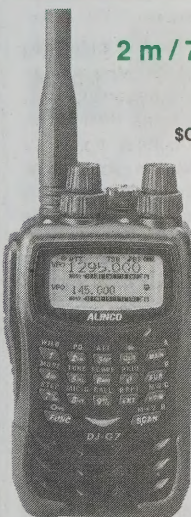
2 m / 70 cm / 1.2 GHz

### DJ-G7T

\$Call - HRO Price

The DJ-G7T tunes 0.531-1300 MHz\* continuously. Full duplex receive with 144/430/1200 MHz bands. AM and WFM modes allow you to hear aviation and broadcast bands. Scan modes and options include 50 pairs of programmable scan memories. Timing adjustable priority scanning and Alinco's Channel-Scope - visualize the presence of radio signals on the display. Output power up to 5 Watts on 2 m.

\*Cell band blocked.



## Alinco Handheld Specifications

Model	Frequency Range	Power	Current Drain Xmit	Current Drain Rec	Power Out **	Memory Channels	Ant Z ohms	Mike Z ohms	Sensitivity at 12 dB	Height in	Width in	Depth in	Weight lbs
DJ-VX50T	2 m / 70 cm	7.4 VDC	1500 mA	80 mA	*	200	50	2k	<12 $\mu$ V	4.65	2.32	1.5	0.5
DJ-A11T	2 m	7.4 VDC	1400 mA	300 mA	.5 / 2 / 5	128	50	2k	<25 $\mu$ V	3.9	2.32	1.4	0.5
DJ-G7T	2 m/70 cm 1240-1299.995	7.4 VDC	1.6 A	200mA	5 W †	1000	50	2k	<15 $\mu$ V	4.53	2.36	1.18	0.6

\*\* Power output is determined by choice of battery pack.

† at 13.8VDC

\* 5W VHF, 4W UHF

# WEATHER STATIONS

# DAVIS

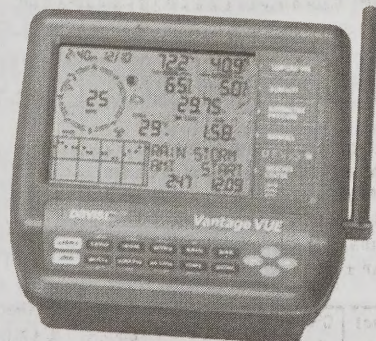
Wireless Weather Stations

### Vantage Vue®

HRO Price \$389.95

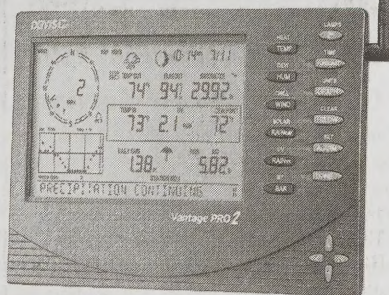
This wireless weather station provides accurate, reliable weather monitoring in a self-contained, easy-to-install system. Includes outdoor sensor array and LCD console.

- Vantage Vue radio-compatible with our flagship Vantage Pro2 professional stations so you can mix-and-match most components.
- Station includes temperature, wind, humidity, and rain sensors; console; and mounting hardware (mounting pole sold separately).
- Console shows: time and date, moon phase, forecast icons, temperature, humidity, barometric trends, heat index, and wind chill.
- Rain totals and rain rate are updated every 20 seconds for the last 25 hours, days, months.
- Domed buttons are easy to sense and press. They glow-in-the-dark.
- Set 22 simultaneous, different alarms to warn of high winds, freezing temperatures, rain rate, flood warning, and more.
- Track daily highs and lows, temperature and barometric changes by the hour.
- Graph the last 25 hours, days or months. View up to 50 graphs including temperature, rain, rain rate, wind and barometric pressure—all on the console.
- Windspeed updates every 2.5 seconds. Displays in miles per hour, meters per second, kilometers per hour and knots. Measures wind direction in compass points or degrees.
- Frequency-hopping spread spectrum radio ensures consistent transmission up to 1,000 ft. (300 m) from integrated sensor suite to console.



### Vantage Pro2™

HRO Price \$509.95



The Vantage Pro2™ weather station has a versatile sensor suite that combines our rain collector, temperature and humidity sensors, and anemometer into one package. Customize by adding consoles or special-purpose options. Available in both wireless and cabled versions.

This is the first and only weather station in its class to use frequency hopping spread spectrum radio technology to transmit weather data wirelessly up to 1,000 ft (300 m) outdoors, line of sight. Typical range through walls under most conditions is 200 to 400 feet (60 to 120 m). Add wireless repeaters for distances up to 1.7 miles (2.7 km).

- Large, backlit 3.5" x 6" (9 x 15 cm) LCD screen.
- Updates every 2.5 seconds.
- Options are available for UV/solar, soil moisture, short and long-range repeaters, and much more.
- Optional WeatherLink data logger and software offer additional analyses.
- Electronic components are housed in a weather-resistant shelter.
- Power the console with the included power adapter or with three C batteries (not included).
- Comes with mounting hardware. Add optional #07717 Mounting Pole or #07716 Mounting Tripod.

## HF / 6 Meter Transceiver



The SDR  
Everyone  
Wants

IC-7610

### Dual Receiver HF Excitement - RF Direct Sampling

The IC-7610 uses an innovative RF direct sampling system to convert a received analog signal to digital. Then it applies sophisticated processing to produce extraordinarily clear audio with high signal-to-noise ratio. The ultra-low noise master clock oscillator yields superior TX and RX performance including an incredible 110 dB of RMDR (reciprocal mixing dynamic range) at 2 kHz frequency separation!

Independent dual receivers allow simultaneous reception of two bands and two modes. Independent RF/AF gain controls are provided, and the optional RC-28 USB remote encoder knob can provide a second tuning dial for greater operating flexibility (optional RS-BA1 remote control software is NOT required).

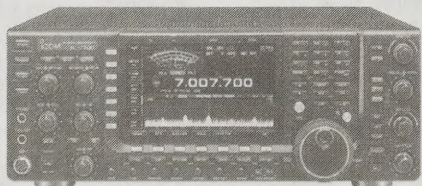
High performance features include 100 Watts of power on 160-6 meters on SSB / CW / FM / RTTY / PSK, built-in high-speed automatic antenna tuner, and digital IF filtering with digital twin passband tuning for outstanding interference rejection.

- Receives 0.30 – 60 MHz.
- DIGI-SEL digital receiver preselector provides tight RF filtering for both main and sub receiver front ends.
- Dual high-speed, high-resolution, real-time spectrum scopes and waterfall displays.
- High-resolution 7" touch-screen color display for quick, intuitive operation and effortless control of functions.
- Superior sound quality speaker.
- SD card saves settings and recorded communications. (Card not included).
- External monitor via a DVI-D port.

- Ethernet port for IP remote operation (optional RS-BA1 software required).
- Compatible with PW-1 linear amp, SM-50 dynamic mic, and AH-4 remote automatic antenna tuner options.

### Speaker SP-41

Designed to match the IC-7610. 7 W high quality with 2 input lines. Has tone select switches, input jack selector switch, headphone jack and speaker ON/OFF switch.



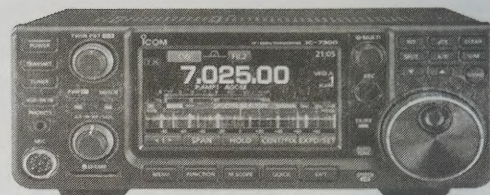
IC-7700

### Contester's Rig

The Contester's rig has two 32-bit floating point DSP units – one for the transmitter / receiver and the other for the spectrum scope. There is a +40 dBm 3rd order intercept point and ultra wide dynamic range. Two IF stages and Icom's image rejection technology allow very weak signals and very strong signals to be heard without distortion.

- 7" wide color TFT LCD. Spectrum waterfall display operated by PC mouse.
- Audio scope function.
- Waveform outline in real-time spectrum scope (ON / OFF).
- Remote control ops for RS-BA1.
- TX delay sets the timing to control an attached external linear amp.
- Added RIT and dTX commands for CI-V remote control.
- Internal distortion reduction.
- Icom's DIGI-SEL.
- Less internal phase noise.
- Multiple AGC loops; full control.

- 200 W power out at full duty cycle.
- Digital IF filters; twin passband tuning; three roofing filters; digital manual notch filter. Adjustable noise blanker.
- Ultra high stability OCXO unit.
- CW / RTTY / PSK31 operation.
- 50 MHz band preamp & mixer.
- Microphone equalizer.
- RF speech compressor.
- Digital voice recorder.
- Increase APF volume level.
- CF memory card.
- 4 antenna connectors.
- Double conversion super-heterodyne.



IC-7300

This HF transceiver has innovative features like the RF direct sampling used in many software defined radios. The real-time spectrum scope with waterfall function gives top-level performance in resolution, sweep speed, and dynamic range.

- SSB, CW, RTTY, AM and FM modes.
- Transmits on amateur HF frequencies plus 6 meters.
- Use the TFT LCD as a touch screen to set various functions and edit memory contents.
- 100 W output HF / 50 MHz bands.
- Built-in high-speed automatic antenna tuner.
- Multi-dial knob for smooth operation. Push to see menu items. Select with a touch of the screen and adjust levels by turning the multi-dial knob.
- Phase noise characteristics are improved about 15 dB (at 1 kHz frequency offset) when compared to other transceivers.
- Remote control operation for RS-BA1.
- Memory keyer functions for CW and RTTY.
- Voice memory function.
- RTTY decode log function.
- Screen capture.
- SD card slot.
- USB for CI-V and audio input / output.
- Large cooling fan system.
- Multi-function meter.
- 101 memory channels (99 regular and 2 scan edge channels).
- Multiple CW functions
- Digital noise reduction.



### Speaker SP-38

Get optimum sound quality with this high quality speaker, perfect for the IC-7300. Rated output is 5 W, maximum input power is 7 W. Impedance is 8Ω.

HRO Price CALL

### All-Band HF IC-718



- Receives 0.03 ~ 29.995 MHz.
- 101 memory channels.
- Modes USB, LSB, CW, RTTY, AM.
- IF shift interference rejection.
- Output power: SSB / CW / RTTY: 5 ~ 100 W variable, AM: 2 ~ 40 W variable.
- Transmits amateur HF except 60 m.
- AF DSP built-in.
- Built-in electronic keyer.
- VOX operation, mike compressor, RF gain control.
- 10-key pad for direct operating frequency entering and memory channel selection.

Extended Warranties  
Available. See Page 54.

# HF BASE

# ACCESSORIES

## The Pinnacle of HF Perfection



### HF Plus 6m

The IC-7851 perfects HF operation with new features such as a 1.2 kHz optimized roofing filter to improve in-band adjacent signal performance. The new design outperforms competitors' similar models in the 2 to 10 kHz separation tests.

Unlike HF rigs using a conventional voltage controlled oscillator for the 1st LO, the IC-7851 uses a direct digital synthesizer (DDS) with a voltage controlled SAW oscillator (VCSO). This new 1st LO design sets a benchmark for phase noise with -150 dBc / Hz at 10 kHz offset (and -140 dBc / Hz at 1 kHz offset).

### IC-7851

The IC-7851 also has the spectrum waterfall function found in the IC-7700. The high-resolution waterfall screen shows the changing amplitude of frequencies over time. An enhanced spectrum scope promotes fast and accurate scan and can be operated with PC mouse via USB port. Dual scope function shows simultaneous activity in both bands to help search a sub-band while maintaining a run frequency on the main band.

## HF Tuner

### Auto Antenna Tuner

#### AH-4



The AH-4 auto-tuner covers all amateur bands from 80 to 6 meters when used with a minimum 23' long wire antenna. With the optional AH-2b antenna element, tune 40 through 6 meters for mobile operation. It has automatic band changes and tunes usually in less than 2.5 seconds. The 45 memories store SWR minimum and tuning combinations. Requires only 300 mW to tune and handles up to 120 Watts. **HRO Price \$279.95**

## Icom HF Specifications

Model	Receive Freq Range	Power Supply	Current Drain Xmit	Power Output †					Mike Z ohms	Receive Circuitry	Sensitivity 1.8-30 MHz	RIT / XIT Range	Notch	Audio
				AM	FM	SSB	CW	FSK						
IC-705	medium wave to 70cm	13.8 VDC		5-10 W	5-10 W	5-10 W	5-10 W		800					
IC-718	0.03-29.995 MHz	13.8 VDC	20A	2-40W		5-100W	5-100W	5-100W	800	Double Conversion	<16µv at 10 dB	±1.2 kHz		>2.0 W
IC-7100	30 kHz - 199.9999 MHz, 400 - 470 MHz	13.8 VDC	22A	1-40W	##	##	##	##	800	Triple Conversion	<18µv at 10 dB	±9.9 kHz	Man + auto	>2.0 W
IC-7300	30 kHz - 60 MHz	13.8 VDC	21A	1-25W	100 W	100 W	100 W	100 W	800	Direct Sampling	<16µv at 10 dB	±9.9 kHz	Man + auto	>2.0 W
IC-7610	30 kHz - 60 MHz	13.8 VDC	23A	1-25W	1-100	1-100	1-100	1-100	800	Direct Sampling	<16µv at 10 dB	±9.9 kHz	Man + auto	>2.0 W
IC-7700	30 kHz - 60 MHz	85-265VAC	5.8A	50W†	200†	200†	200†	200†	800	Double Conversion	<16µv at 10 dB	±9.9 kHz	Man + auto	>2.6 W
IC-7851	30 kHz - 60 MHz	85-265VAC	5.8A	50W†	200†	200†	200†	200†	800	Double Conversion	<16µv at 10 dB	±9.9 kHz	Man + auto	>2.0 W

† Output is continuously adjustable from 5 to full power. \* 50 W on 2 meters, 20 W 70cm. ## 2-100 W HF / 50 MHz, 2-50 W VHF, 2-35 W UHF.

## Microphones



IC-SM30

This goose-neck style desktop microphone features an 8-pin metal connector, PTT / PTT lock switches and low-cut filter. It also has an adjustable microphone output level and the voice characteristics have been especially designed for SSB and FM. IC-OPC589 required for use with radios with modular jack [IC-703, IC-706series, IC-7000, IC-7100].

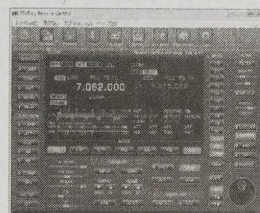


IC-SM50

This unidirectional, dynamic microphone is designed for select Icom base station transceivers. (It cannot be used with non-Icom transceivers since the power is supplied from the connected transceiver). The SM-50 features Up-Down tuning (on compatible Icom transceivers). There is a switch for PTT and also a lock feature. A low cut switch on the top of the base cuts out the low frequency components on input voice signals.

IC-OPC589 required for use with radios with modular jack [IC-703, IC-706series, IC-7000, IC-7100].

## Software



### RS-BA1

### IP Remote Control for HF Transceivers

Remotely control Icom transceivers through an IP network with the RS-BA1. It allows you to install the radio in another room using your home network or a remote location over the Internet. The low voice latency caused by the RS-BA1 provides the same operational experience as using an actual radio. Most functions and modes of your transceiver can be controlled.

The RS-BA1 has two component applications: System Configuration to set up the IP address and other settings, and Remote Control allows you to control the radio. The display on the RS-BA1 is similar to the radio's front panel. Supports the IC-7100, 7200, 7410, 7300, 7600, 7610, or 9100 with USB connection to a PC. Also the IC7800 or 7700 connected to a PC with an RS-232C cable plus S/P DIF or ACC cable.



### IC-RC-28 Remote Control USB Encoder

The optional RC-28 utilizes the same tuning knob and encoder used on Icom HF radios, providing a tactile option for the RS-BA1 software. The encoder includes a PTT and two user-programmable function keys. The RC-28 is not a standalone control for Icom radios and may only be used with the RS-BA1 software.

## Dual Band Analog Mobile

### Practical Dual Bander

**IC-2730A \***  
with Optional  
Bluetooth  
Headset



This high performance mobile radio is a classic 2 m / 70 cm operation.

- Wideband receiver 118-174 / 375-550 MHz.
- Large backlit LCD screen.
- V/V & U/U simultaneous receive.
- Hands-free capable with optional UT-133.
- Optional VS-3 Bluetooth® headset.
- Cross band repeater capability.
- CS-2730 free download PC programming software.
- 50 Watts output on VHF and UHF.
- Squelch delay and squelch attenuator.

- Built-in 50 CTCSS and 104 DTCS tones with split tone function.
- Controller attachment to the main unit (with optional MBA-4).
- 1052 memory channels including 50 scan edges and 2 call.
- Weather channel receive with weather alert (USA version only).
- HM-207 remote control mic is standard.
- 16 DTMF autodial memories.
- CI-V remote control capability (through the optional OPC-478UC).

\*Deluxe version includes MBA-5 remote head bracket.

## Handheld Batteries & Chargers

### "AA" Alkaline Packs

BP-204, BP-208N, BP-263, BP-273, BP-293

\* Requires BC-123S AC adapter.

\*\* 220 version available

Model	Volts	Rating mAh	Trickle Charger	Rapid Charger
BP-210N	7.2	1650	BC-146-01#	BC-144N-51
BP-264	7.2	1400	BC-192-12#	BC-191-12" **
BP-265	7.4	1150		BC-193" **
BP-271	7.4	1150	BC-167SA	BC-202"
BP-272	7.4	1880	BC-167SA	BC-202
BC-287	7.2	2800	BC-123S	BC-223

## Icom Handhelds

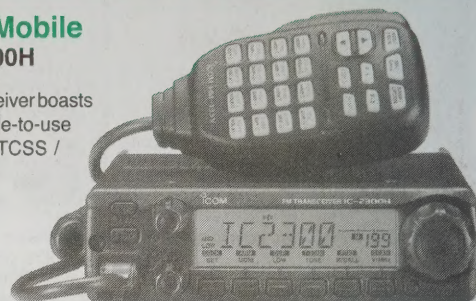
Model	Frequency	Power Supply	Power Out Transmit*	Current Transmit	Drain Receive	Sensitivity at 12 dB	Height in(cm)	Width in(cm)	Depth in(cm)	Weight oz(g)	HRO Price
IC-V86	2m	7.2 VDC	7 W								CALL
ID-31A	70 cm	7.4 VDC	5.0/2.5/ 1.0 W	2.5 A	450 mA	<12µV	3.7 (9.4)	3.7 (9.5)	1.0 (2.4)	7.8 (220)	CALL
ID-51APlus-2	2m / 70 cm	7.4 VDC	5.0 / 2.5 / 1.5 W	2.5 A	<450 mA	<18µV	4.1 (10.5)	2.28 (5.8)	1.0 (2.6)	9.0 (255)	CALL

\* Power with standard battery pack.

## Single Band Analog Mobile

### 2 m Mobile IC-2300H

The IC-2300 2m mobile transceiver boasts a powerful 65 W output, simple-to-use user interface, and built-in CTCSS / DTCS encoder / decoder.



- Simple operation with a large tuning dial.
- 207 alphanumeric memories.
- Dynamic memory scan allows scanning of selected memory banks.
- Pocket beep function for incoming calls.
- DTMF autodial.
- Select yellow, green or amber display.
- PC to XCVR and XCVR to XCVR cloning (optional software and cable required).
- Automatic repeater function and weather channel (USA only).
- Power supply voltage display, time-out timer, repeater lock out, auto power off.
- Selectable squelch delay and squelch attenuator.
- Wide / narrow channel setting.
- Passed MIL-STD 810G specifications.

## Icom Handheld Accessories

		ID-51A & 31A	V86	HRO Price
Battery Packs	BP-264		◆	\$38.95
	BP-298		◆	\$59.95
	BP-271	◆		\$74.95
	BP-272	◆		\$99.95
Battery Cases	BP-263		◆	\$26.95
	BP-273	◆		\$49.95
Carrying Cases	LC-178	31A		\$28.95
	LC-179	51A		\$34.95
	SJ-1	51A		\$34.95
Cables	CP-12L	◆		\$34.95
	CP-23L		◆	\$35.95
	OPC-254L	◆		\$16.95
	OPC-478		◆	\$39.95
	OPC-478UC		◆	\$60.95
	OPC-515L		◆	\$20.95
	OPC-2004L		◆	\$24.95
	OPC-2006LS*	◆		\$29.95
	OPC-2144	◆		\$29.95
Speaker Mics	HM-75LS	◆		\$74.95
	HM-158LA		◆	\$44.95
	HM-159LA		◆	\$69.95
	HM-166LS	◆		\$79.95
	HM-188LS	◆	◆	\$52.95
Headsets	HS-94	◆	◆	\$22.95
	HS-95	◆	◆	\$144.95
	HS-97	◆	◆	\$35.95
Other	SP-27		◆	\$35.95
	AD-92SMA	◆	◆	\$18.95
	MB-124		◆	\$10.95

\* Cable only to be used with HS-94, 95, or 97.

## RECEIVERS

## Newest D-Star

### Analog HT



#### IC-V86 2 Meter Single Band

Class-leading 7 W output power and new antenna design increase communication coverage.

- Frequency coverage (TX/RX guaranteed range): USA: 144-148 MHz, EXP: 136-174 MHz.
- Built-in CTCSS and DCS encoder/decoder.

- 1500 mW powerful and crystal clear audio provides clear communication even in noisy environments.
- Solid structure meets IP54 and MIL-STD 810G standards.
- Supplied BP-298, 2250mAh (typical) large capacity Li-ion battery pack.
- Optional BP-299, 3150mAh (typical) extra large capacity Li-ion battery pack.
- Supplied BC-240, battery charger with the charging control function which reduces degradation of battery.

### Handheld Receiver

#### IC-R30

The latest addition to the Icom receiver line has great new features:

- Dual receive on different bands and different modes.
- Dual band recording to individually record the audio of the two bands received.
- Wideband coverage: 01 to 3304.99 MHz. Dmodulates conventional analogue signals such as AM, FM, WFM, USB, LSB and CW as well as digital modes.



- Integrated GPS receiver.
- Record and playback from optional microSD card.
- Wireless listening with optional VS-3 bluetooth headset.
- Built-in USB port for charging and data transfer and CI-V control
- Digital decode of various digital protocols signals, including P25 (Phase 1), NXDN™, dPMR™, D-STAR (Digital Smart Technology for Amateur Radio) and Japanese domestic DCR (Digital Convenience Radio).

### Receiver



#### IC-R8600 Wideband Receiver

- Ultra-wide frequency coverage (10 kHz-3 GHz) with RSSI (received signal strength indication) function.
- Fast moving, real-time spectrum scope and waterfall.
- Decodes multiple digital protocols, including D-STAR®, NXDN™, dPMR™ and APCO P25.
- Large 4.3 inch TFT color touch screen display.
- Clear audio quality using FPGA / DSP base architecture with superheterodyne circuitry.
- Optional IC-CSR8600 PC remote control software allows control of all receiver functions.
- I/Q signal output for use with third-party SDR software and/or external decoding.
- SD card slot for logs and voice recording.

### Handheld Receiver

#### IC-R6 Sport



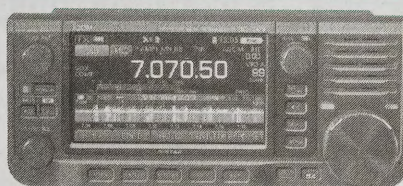
The IC-R6 is a Signal Search Machine. Covering 100 kHz to 1309.995 MHz (cellular blocked and receives analog TV only), it can search 100 channels per second. The receiver is energy-efficient, designed to provide up to 15 hours of listening on a single charge.

With 1300 alphanumeric memory channels, 50 scan edges, and 200 auto-write memories, there are many scanning opportunities. The bank link feature allows connecting any of the 22 memory banks. The Voice Squelch Control opens the squelch only when a modulated signal is detected.

### IC-R6 Accessories

Model	Description	MSRP Price
<b>Cloning</b>		
OPC-478	Cloning Cable (RS-232C)	\$39.95
OPC-478UC	USB PC to Radio Programming Cable	\$60.95
<b>Other Accessories</b>		
SP-27	Tube Earphone	\$35.95
AD-92SMA	BNC antenna adapter	\$18.95
FA-S270C	Antenna (same as supplied)	\$33.95

### D-Star QRP



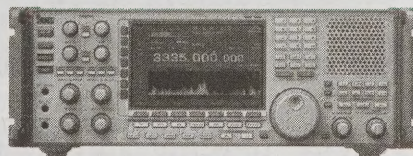
#### IC-705



#### QRP HF/50/144/430 MHz All Mode DSTAR

- 10W output (13.8 VDC) and 5W with BP-272 battery. D-Star, SSB, CW, AM, FM modes.
- Receives continuously from medium wave broadcast band to 144MHz.
- RF Direct Sampling System with real-time spectrum scope and waterfall display.
- Includes BP-272 battery.
- A whip antenna for VHF/UHF and speaker-microphone come standard. The speaker-microphone HM-243 is equipped with programmable buttons assignable to various functions, such as frequency adjustment and volume control. GPS antenna is built-in.
- Compact and lightweight design.
- Bluetooth and wireless LAN built-in for smart phone linking and remote control and for use with Bluetooth headsets.
- MicroSD card slot for firmware upgrades, programming, voice recording, and saving GPS log data.
- Optional backpack LC-192 for field operations.

### Receiver



#### IC-R9500 Professional Communications Receiver

- +40 dBm IP3 / 109 dB wide dynamic range.
- Measuring class accuracy. Dual IF filter.
- Superior BPF unit.
- Dual DSP. 10 VFOs.
- 7" wide color TFT LCD.
- High resolution spectrum scope. 1000 memories.
- 2 channel noise blanker.
- 5 roofing filters. 2 point manual notch filter.
- 0.005-3335 MHz. Cellular blocked.
- All bands: SSB, CW, FSK, AM, FM, WFM on some.
- Digital voice recorder.
- 4 antenna connectors

## HF and More With D-Star

### Multi-Band All-Mode Operations

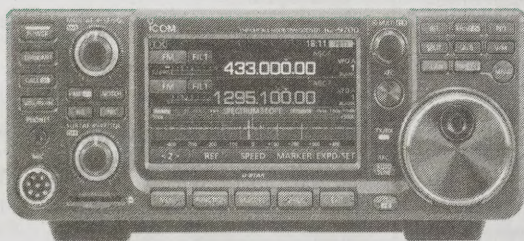
IC-7100

### HF Plus 6 m / VHF / UHF with D-STAR



- Intuitive touch screen interface.
- Easy-to-see, easy-to-use slant top controller.
- Built-in high efficiency oval speaker on the controller.
- D-STAR DV mode digital voice and low speed data communications.
- 505 memory channels.
- SWR graphic display.
- Optional MBF-1 mounting base.
- Built-in SD card slot for voice storage and data cloning.
- Built-in RTTY functions.
- Easy vehicle mounting (optional MBF-1).
- IF DSP controlled digital features. The 32-bit floating point DSP supports many digital processing features such as digital IF filter, twin PBT and manual notch filters.
- Remote Control Software (optional RS-BA1 IP).
- CW full break-in.
- CW auto tuning.
- USB Audio/Control.
- IF-DSP.

## VHF / UHF D-Star



IC-9700

### VHF / UHF Transceiver with D-Star

Designed for the VHF / UHF weak signal operator, the IC-9700 is an RF direct sampling receiver for 2 m and 70 cm, with a single down conversion for 23 cm with an IF sampled receiver between 311 – 371 MHz. This design provides a quiet receiver with the power of Icom's DSP technology along with a robust PA providing 100 W on 2 m, 75 W on 70 cm, and 10 W on 23 cm.

- All mode, tri-band transceiver covers 144, 430 / 440 and 1200 MHz.
- Supports CW / AM / SSB / FM / RTTY and D-STAR DV and DD modes.
- Digital Data (DD) mode provides 128 kbps data communication.
- PA has a powerful 100 W (144 MHz), 75W (430 / 440 MHz) and 10W (1200 MHz) output.
- 4.3" touch screen color TFT LCD.
- Smooth satellite operation with normal / reverse tracking and 99 satellite channels.
- Real-time, high-speed spectrum scope and waterfall display.

## D-Star Mobiles

ID-4100A

### Dual Band D-STAR GPS Mobile



Terminal & access point modes. Extend D-STAR coverage with the Internet DR (D-STAR repeater) function. (Optional data cable and free-download application required.)

- Full dot-matrix display with easy-to-read characters and icons.
- Compact, detachable controller for flexible installation.
- Bluetooth capable for hands-free operation. (Optional Bluetooth unit and readset required.)
- Integrated GPS and microSD card slot. (MicroSD card required.)
- Enhanced remote control apps for smart devices. (Optional Bluetooth unit and free download application required.)
- iOS app.
- Terminal/access point mode.

ID-5100A Deluxe

### Dual Band D-STAR

with  
Touch  
Screen



This ID-5100A dual band D-STAR mobile has a large, responsive touch screen LCD and Bluetooth connectivity.

- Wideband receive (118-137 MHz (AM), 137-174 / 375-550 MHz only).
- Antenna RX diversity (second antenna connector).
- DTMF decode / DV / FM repeater list.
- Optional UT-133 Bluetooth unit enables audio accessory connection and Android terminal connection (CI-V via Bluetooth SPP profile).
- Optional VS-3 Bluetooth pendant earpiece mic.
- 1,000 memory channels.
- Built-in GPS engine.
- Includes MBA-2 remote head bracket.
- RS-MS1A Android application: a free-to-use download.
- Independent VHF and UHF band units (VV / UU capable) for 50 W output.
- D-Plus reflector usability (select "reflector" in TO field).
- DV dual watch for simultaneously waiting in two DV voice streams (decodes one only).
- Home button (same as ID-51 feature).
- HM-207 control microphone is supplied as standard.

**Extended Warranties Available  
for Icom Radios.  
Details on Page 54.**

# D-STAR CENTRAL

## D-Star Dual-Band & 70cm Handhelds

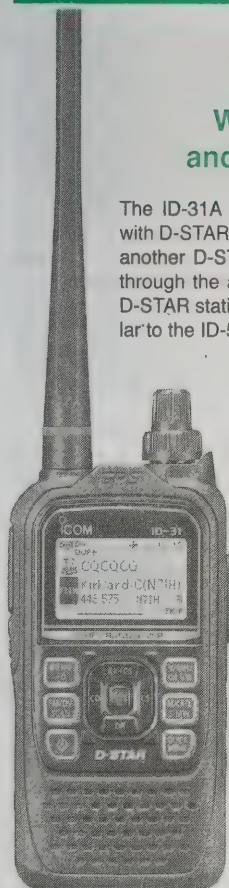
### ID-31A Plus D-STAR® 70 cm Handheld With Terminal Mode and Access Point Mode

The ID-31A PLUS is a 5 W UHF single bander, both with D-STAR and integrated GPS receiver. You can use another D-STAR radio to send your voice and/or data through the access point radio, and communicate with D-STAR stations all over the world. Its features are similar to the ID-51A PLUS-2.

The radio features Terminal Mode, Access Point Mode, DV / FM Repeater Search Function, DV Past Data Mode, Integrated GPS Receiver, microSD Card Slot, IPX7 waterproof construction, and RS-MS1A remote control software (free download Android™ application from Google Play™). The ID-31A is available in Red, Silver and Gold color versions.

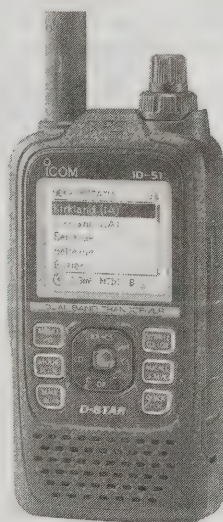
Other Features include:

- Three hours rapid charging with supplied wall charger (BP-271).
- Long lasting battery pack.
- CS-31PLUS programming software supplied.
- Enhanced D-PRS functions link commands.



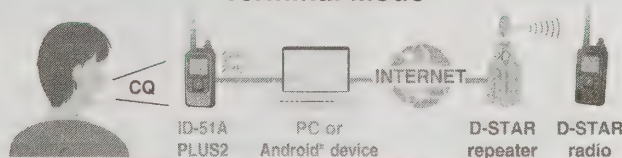
### ID-51A Plus-2 D-STAR® Dual-Band 2 m / 70 cm Handheld With Terminal Mode and Access Point Mode

The D-STAR evolution continues as Icom introduces the third generation ID-51A PLUS-2, adding two NEW D-STAR modes of operation: Terminal Mode and Access Point Mode. The new modes allow you to make calls through the Internet, even from areas where no D-STAR repeater is accessible.

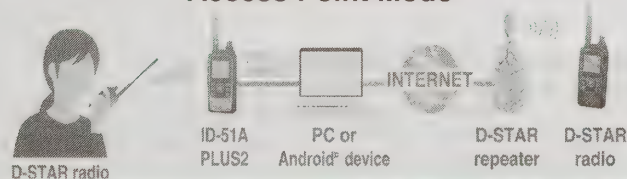


- 5 W output power.
- VHF / UHF dual band.
- Integrated GPS receiver.
- Four power settings available: 5.5 / 2.5 / 1.0 / 0.5 W.
- Includes IC-OPC-2350LU data cable. (ID-51A PLUS2 Only)
- Transmit 144-148 and 430-450 MHz. (ID-51A PLUS2 Only)
- Receive A: 137-174; B: 108-174, 380-479 MHz (ID-51A PLUS2 Only)
- Broadcast receive 0.52-1.710, 88-108 MHz.
- Listen to FM, AM, and SWL while using the dual watch function for ham bands. (ID-51A PLUS2 Only)
- MicroSD card slot for voice, log data storage, and data cloning.
- Voice memory records incoming and outgoing calls. Can be used as a voice recorder.
- Automatic position reply function transmits your current position when receiving a call.
- CSV formatted com log. GPS log function.
- 1304 memory channels.
- Send and receive pictures.
- D-STAR DV mode with improved data transfer.
- Speech function gives frequency, mode, and call sign.
- IPX7 submersible.
- V/V, U/U, V/U dual watch receives two bands simultaneously. (ID-51A PLUS2 Only)
- CTCSS and DTCSS.
- Integrated GPS position data can be sent simultaneously. Altitude data added to GPS memories.
- Repeater search function searches up to 20 nearby.
- Enhanced D-PRS functions: receiving only base / object / item / weather formats.
- Send CI-V commands through DATA connector.
- Callsign, repeater list and GPS memory import and export in the CSV format.
- RS-MS1A Android™ application for the 51A Plus only (OPC-2350LU cable now included).
- Additional duplex reflector link commands.
- DV and FM repeater search function.
- CI-V commands added such as GPS TX mode, DV data TX, and GPS ON/OFF settings.
- PC programmable; CS-51 cloning software supplied.
- Full dot-matrix display and directional keypad.
- Choose Black, Blue Cloud, Gray Camo, Green Leaf, Red Cross for the ID-51A Plus.

#### Terminal Mode



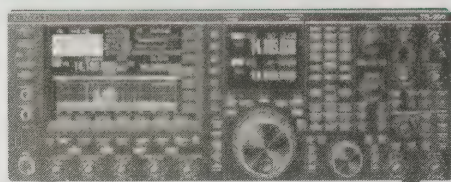
#### Access Point Mode



### Icom Mobile Specifications

Model	Freq Range	Mode	Power Supply	Current Drain Xmit	Current Drain Rec	Power Out Watts	Ant Z ohms	Mike Z ohms	Sens	Audio Power	Built-in AC Supply
IC-2300H	2m †	FM	13.8 VDC	11 A	1.5 A	65	50	600	<18 µV	4.5 W	no
IC-2730A	2m / 70 cm	FM	13.8 VDC	13 A	1.8 A	50	50	600	<32 µV	>2.0 W	no
ID-4100A	2m / 70 cm	FM/D Star	13.8 VDC	13 A	1.8 A	50	50	600	<15 µV	>2.0 W	no
ID-5100A	2m / 70 cm	FM/D Star	13.8 VDC	13 A	1.8 A	50	50	600	<15 µV	>2.0 W	no

† Extended receiver coverage 118-174 MHz (airband included), 440-450 MHz %extended receiver range. See text with radio.



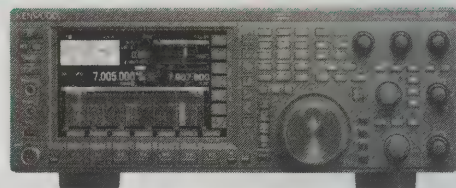
**TS-990S** \$CALL HRO Price

The TS-990S raises the bar on HF performance and DX operating ease. Dual display and dual watch gives you the edge in DX contesting.

- Frequency range HF + 50 MHz.
- Output pwr: 5-200 W.
- Built-in antenna tuner.
- Mode: SSB, CW, FSK, PSK, FM, AM.
- Built-in switching power supply.
- Comm ports: USB A / B and LAN.
- Dual TFT display and dual receiver. Main display monitors target signal vicinity and sub display monitors actual target signal.
- Down conversion for all Amateur Radio Bands (main receiver).
- IP3 + 40 dBm mixer performance.
- Narrow-band high-IP roofing filters.
- TCXO  $\pm 0.1$  ppm for high stability receive.
- Dedicated triple DSP for main & sub-receivers plus band scope.
- Remote PC operation.
- Data mode facilitates switching between external terminals.
- Advanced AGC – digital and analog.
- 2-step split frequency configuration for quick setup.
- Maximum of 120 memory channels. Dual channel memory allows access while receiving two frequencies simultaneously.
- Memory accessible during split/sub receiver operation.
- Two USB sockets on front panel.
- Firmware updates via USB stick or cable.
- VCO division-type first oscillator divides high frequencies to ensure high C/N.
- Dedicated triple 32-bit floating point DSPs for main & sub receivers plus band scope, audio scope and S-meter.
- Cooling system capable of providing ample airflow to each unit to ensure a stable 200 W output.

## HF / 50 MHz Transceiver

**TS-890S**  
\$CALL HRO Price



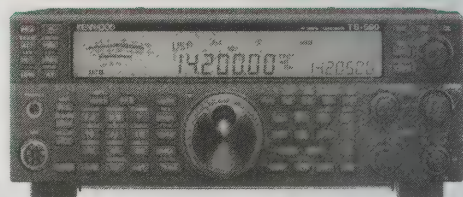
The Kenwood TS-890S transceiver features a full down conversion receiver with h-mode mixer and High C/N 1st LO with four built in roofing filters: 500 Hz, 2.7 kHz, 6 kHz and 15 kHz (optional 270 Hz). This new transceiver has a 7 inch color TFT display and includes roofing frequency sampling band scope, auto scroll mode and multi information screen. Heavy-duty construction and a high-speed 100 W antenna tuner come standard. The configuration of the band scope receiver has changed from the superheterodyne system used in the TS-990S to 1st IF sampling using an A/D converter (14bit/39MHz), and FPGA digital down conversion. This means a change in scanning method from step FFT to FFT, achieving high-speed updates to the display irrespective of span settings.

- Cross tone.
- IF filter shape, AF filter.
- Audio peak filter, AGC quick recovery.
- Notch filter, noise blanker.
- Highly reliable 100 W final-stage amplifier circuit for HF and 50 MHz.

## HF / 50MHz All-Mode Transceiver

### Peerless Performance

**TS-590SG**  
\$CALL HRO Price



The TS-590SG is an upgrade to the TS-590S and features a narrow-band roofing filter to significantly reduce interference from unwanted signals. The resulting excellent RX performance reveals signals that would be hidden to lesser rigs. With IF AGC based on advanced DSP technology, Kenwood has essentially redefined HF performance.

- Has sharp 500 Hz / 2.7 kHz roofing filter and dedicated first mixer.
- Built-in electronic memory keyer.
- Programmable keys, 110 memory channels, memory scroll function, multiple scan functions.
- Advanced AGC through digital signal processing from the IF stage onward, digital IF filters, detection and demodulation, noise reduction and IF notch IF auto notch, IF AGC, AF digital signal processing, two types of noise reduction, and TX audio shaping.
- Direct frequency entry, USB connectivity for PC control, remote control using a computer, optional voice guide and storage unit.
- Morse code decoder function.
- Transmitter features: 100 Watt heavy-duty design, built-in automatic antenna tuner, optional TCXO, drive output, speech processor (SSB / AM / FM), adjustable TX filter (SSB / AM), TX equalizer, TX monitor; VOX, adjustable TX power output and CAR level.
- Split function enabling quick setting.

## Kenwood HF Specifications

Model	Receiver Frequency Range	Power Supply		Current Drain		Power					Mike Z	Receive Circuitry	Sensitivity	RIT / XIT	Notch Filter	Audio
		50/60 Hz AC	DC	Xmit	Rec	AM	FM	SSB	CW	FSK						
TS-590SG	0.13 MHz - 60 MHz		13.8 V	20.5 A	1.5 A	25	100	100	100	100	600	#	< 2 $\mu$ V	$\pm 9.99$ kHz	> 70 dB	1.5 W
TS-890S	1.81-29.7 MHz 50-52 MHz		13.8 V	22.5A	2.5A	50	100	100	100	100	600	Double Superheterodyne	< 2 $\mu$ V	$\pm 9.99$ kHz	> 70 dB	1.5 W
TS-990S	0.13-30 MHz 50-54 MHz	yes		720VAC 120VAC	50	200	200	200	200	200	600	Double Superheterodyne	< 2 $\mu$ V	$\pm 9.99$ kHz	> 70 dB	1.5 W

# Double Conversion SSB, CW, AM; Triple FM (1)170, 200, 425, 850 Hz \*Output 440 MHz 50 W and 1000 MHz 10 W

## 2 Meters plus Weather

### TM-281A

#### \$CALL

— HRO Discount Price



On or off road, the TM-281A delivers powerful mobile performance with 65 W maximum output. The weather alert radio function checks the 1050 Hz tone from NOAA (US only). The radio features 200 memories (100 if memory channel names are assigned to the channels), menu for easy control and function selection, CTCSS or DCS to reject unwanted calls, easy to read large LCD alphanumeric display, FM and narrow band FM ready, and free PC memory control software is available.

## Accessories



### SP-890

#### External Speaker

Designed to match Kenwood's TS-890S, this external speaker features dual inputs and high cut and low cut filters as well as a headphone jack on the front.

### KPS-15

#### Switching Power Supply

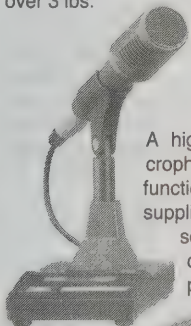
Provides 13.8 V at 23 A continuous or 25 A surge. Housed in a heavy metal case with an internal cooling fan, this small supply weighs just over 3 lbs.



### MC-90

#### Desk Microphone

A high-quality DSP-compatible desk top microphone with UP / DOWN, PTT / PTT lock functions, wired with an 8-pin round plug. It is supplied with two interchangeable baffled wind-screens which offer either a wide range frequency response or a "DX" response with peak response at around 3 kHz.



### MC-60

#### Desk Microphone

A dynamic moving-coil type unidirectional desk microphone with PTT / PTT lock and swivel capability also includes a switchable preamp. Batteries are included and must be installed for preamp operation. Dual impedance 500 Ohm / 50 K Ohm slide switch selectable. Comes with 8-pin round connector but can be used with Kenwood

RJ-45 equipped radios using optional MJ-88 adapter.

## Dual-Band Mobiles

### TM-D710G 2 m / 70 cm

\$CALL — HRO Discount Price



Kenwood provides advanced APRS® ham radio equipment with the TM-D710G mobile transceiver. It offers even more features and versatility than its predecessor. The detachable control head comes with remote cable for easy installation. The radio incorporates a 9-pin PC connection for easy hook-up to program frequencies and other APRS® mapping programs. Your TM-D710G is a full dual-band radio so VHF+VHF / VHF+UHF / UHF+UHF operation is possible. Full digipeater functions allow anyone to set up a digipeater location wherever needed to help fill in APRS® nationwide network. Internet gateway operation is also possible for world-wide text communication over VHF.

- Now includes built-in GPS and upgraded firmware.
- Output 50 W VHF / UHF.
- Receives 118-1300 MHz (cellular blocked).
- Two backlight colors: amber / green.
- Alphanumeric dot-matrix LCD display.
- Easy-to-use menus. 1000 memories.
- Internal clock for APRS® time & date stamping.
- APRS® filter and sort functions.
- APRS® speed and altitude beaconing.

- Three different APRS® grids.
- EchoLink® ready with 10 dedicated memories.
- APRS® QSY function, delay algorithm, voice alert and weather beaconing.
- Dual receive and NOAA weather alert.
- SkyCommand II.
- Sound card interface.
- VGS-1 voice guide and storage optional.
- NMEA 0183 GPS I/O port.
- Free MCP programming software.



### TM-V71A

#### 2 m / 70 cm

Kenwood's TM-V71A FM dual bander is equipped to shine in any mobile communications role. It features 50 W output, 1000 memory channels, multiple scan options and PC connectivity.

- High power output: 50 W on VHF / UHF.
- Same band dual receive (V/V, U/U, V/U).
- Compatible with ARRL TravelPlus.
- "Five-in-One" programmable memory storing five different operating profiles.
- 1000 split memory channels plus an additional 10 for programmable scan.
- PC programmable w/PG-5G (optional).
- Built-in CTCSS/DCS encoder.

- 104-code digital code squelch.
- Invertible front panel.
- Choice of backlight (amber / green).
- Voice guidance and storage option with optional VGS-1.
- Weather alert / RX (US only).
- EchoLink® Sysop mode for node terminal operation.
- EchoLink® memory autodialer.
- Wide band receive (118-524 MHz and 800-1330 MHz cellular blocked).
- Backlit MC-59 16-key hand mic.
- Selectable repeater offset or auto repeater offset (on VHF only).

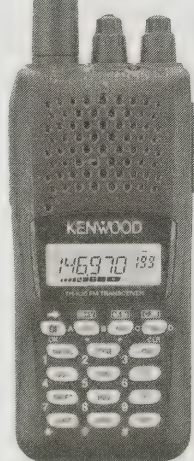
**HRO Offers Extended Warranties on  
Kenwood Radios. See Page 54.**

## Single Band

### TH-K20A 2 m

This 2-meter handheld is the successor to the TH-K2 series.

- Tone alert (bell).
- Cross tone.
- 5.5 W RF output.
- Weather CH scan.
- VOX Included (optional headset required).
- Battery capacity indicator.
  - Auto repeater offset.
  - Direct function key.
  - Firmware upgradable.
  - Built-in CTCSS, DCS and 1750 Hz tone burst.
  - Direct frequency entry.
  - Auto repeater offset.
  - Time-out timer.
  - Beat shift.
  - Frequency shift.
  - Key lock type select.



## Dual Band

### TH-D72A 2 m / 70 cm

Enhanced GPS & APRS® capability

- 2 m / 70 cm transmit with wide band receive.
- Dual receive, V/V, U/U, V/U, U/V.
- 5 Watts transmit.
  - Built in GPS uses the SiRF Star III chipset (same as Garmin).
  - GPS track logging function. Memory can be output to PC in KML format to be displayed on Google Maps.
  - 1000 memory channels with 8 digit alpha name function.
  - Built in 1200 / 9600 TNC AX.25 with KISS mode and digipeat functions.
  - Mini USB connector built-in.
  - Built-in Kenwood Sky Command II.
  - Smart beaconing.
- External GPS ready, built in RS-232 com port (same as D7).
- Air band RX with 8.33 kHz step.
- Free programming software.

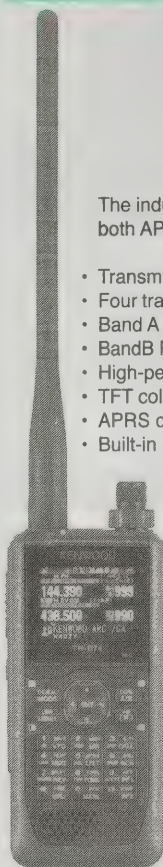


## APRS / D-STAR®

### TH-D74A 2 m / 220 Mhz / 70 cm Tri- Band

The industry's first portable amateur radio supporting both APRS and D-STAR®.

- Transmits: 144-148, 222-224.995, and 430-450 MHz.
- Four transmit power selections: (5 / 2 / .5 / .05 Watts).
- Band A receives: 136-174, 216-260, & 410-470 MHz.
- Band B Receives: .1-524 MH (76-108 WFM).
- High-performance DSP for quality audio.
- TFT color LCD for excellent visibility.
- APRS data transmission / reception.
- Built-in GPS. Built-in TNC.
  - Store up to 100 stations.
  - 1000 Alpha memories.
  - QSY function.
  - D-Star compatible.
  - DV fast data mode.
  - Wideband multi-mode reception.
  - Flexible operation of voice mode and data mode.
  - IF filter handles adjacent unwanted signals.
  - IF output mode.
  - Weatherproof (IP54 / 55).
  - Bluetooth® standard.



## Kenwood VHF / UHF Specifications

Model	DC Power Supply	Transmit	Receive	Output Power	Sensitivity	HRO Price
TM-281A	13.8 V	13 A	1.2 A	65 W	<16 $\mu$ V	CALL
TM-V71A	13.8 V	13 A	1.2 A	50 W / 50 W	<16 $\mu$ V	CALL
TM-D710G	13.8 V	11.5 A	1.0 A	50 W / 50 W	<16 $\mu$ V	CALL

## Handheld Battery Packs

Battery	Voltage	Rating MAH	Desk Charger	Radio Series	HRO Price
PB-45	7.4	1800	KSC-32	TH-D72A	\$69.95
KNB-65L	7.4	1520	KSC-35S	TH-K20A	\$47.95
KNB-74LW	7.4	1100	KSC-25LSK	TH-D74A	\$74.95
KNB-75LW	7.4	1800	KSC-25LSK	TH-D74A	\$84.95

## Kenwood Handheld Specifications

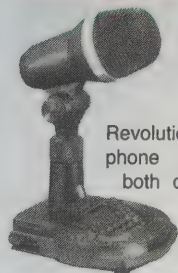
Model	Freq Range	Power Supply	Power Out	Current Transmit	Current Receive	Sensitivity	Height in (cm)	Width in (cm)	Depth in (cm)	Weight oz (g)	HRO Discount Price
TH-K20A	144-148 MHz	6-9 VDC	5.5 W			<16 $\mu$ V	4.4 (11.2)	2.13 (5.4)	1.0 (2.5)	7.4 (210)	CALL
TH-D74A	144/220/440MHz	5-7.5VDC	5 W			<18 $\mu$ V	4.72(11.9)	2.2(5.5)	1.33(3.4)	7.13 (202)	CALL
TH-D72A	144/440MHz	7.4VDC	5 W			<18 $\mu$ V	4.78(12.1)	2.28(5.8)	1.31(3.3)	13.1 (370)	CALL

HRO Offers Extended Warranties for Kenwood Radios.

# YAESU

The radio

## Desk Microphones

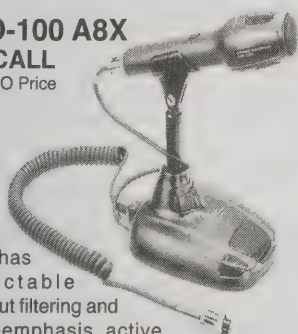


**M-1**  
**\$CALL**  
HRO Price

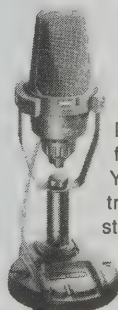
Revolutionary dual microphone configuration has both dynamic (for depth and warmth) and condenser (for crisp highs) elements. The M-1 lets you adjust the balance of the two microphone sources to create a sound that is just right for your voice. The nine-band graphic equalizer applies to each mic element independently. A clip-on cowling enhances the response of both elements by minimizing aural interference. The solid aluminum die cast mic stand prevents sympathetic vibration. The central recessed control panel has been configured for ease of use. Check your voice in the headphones with the built-in record and playback feature. The built-in memory can store two different groups of settings for each microphone.

## MD-100 A8X

**\$CALL**  
HRO Price



This desk mic has selectable low-cut filtering and high-emphasis active filtering that allow you to tailor the microphone response for optimum voice clarity or DX punch. It has a large push-to-talk switch and latching button, along with a large rotary up/down, slow/fast control for scanning.



## MD-200 A8X

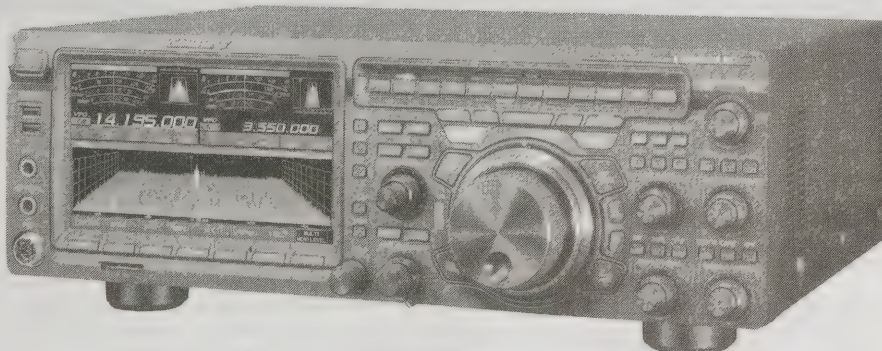
**\$CALL**  
HRO Price

Desk microphone designed for base station use with Yaesu's newest generation transceivers. Features a studio-quality polyethylene terephthalate film dynamic element. Provision for incorporating user supplied mike element with a switch to select between the standard and user element.

# HF BASE STATION

## The Legend Continues

*The Transceiver that only Yaesu could create.  
It's New. It's Bold. It's a Legend in the Making.*



## FTDX101MP

**HF / 50 MHz Transceiver**  
**200 W**

## FTDX101D

**HF / 50 MHz Transceiver**  
**100 W**

The new FTDX101 series is an impressive achievement from Yaesu's elite "FTDX" design team, utilizing the very latest SDR technology and brilliantly-executed firmware to yield a high-end transceiver that exudes quality and high performance. Building on the legacy of the legendary best-selling FT-101 line, the new FTDX101 series stands to create its own legacy as one of the best performers ever available to the elite-class operator.

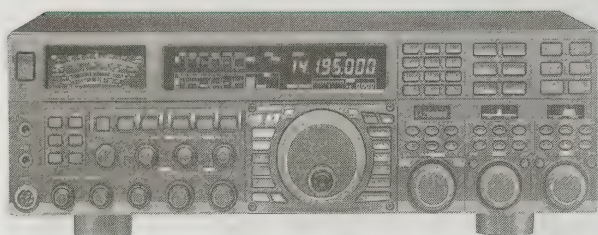
### Features include:

- Superb, class-leading close-in dynamic range.
- FTDX101D: 5-100 Watts all modes except AM (25 W).
- FTDX101MP: 5-200 Watts all modes except AM (50 W).
- 9 MHz IF roofing filter for excellent close-in IMD immunity.
- 400 MHz HRDDS (high resolution direct digital synthesizer).
- Hybrid SDR: direct damping & NBW (narrow bandwidth) SDR technology.
- Completely independent dual receivers.
- High-Q VC-tuning front-end with general coverage RX.
- Yaesu renowned interference reduction system with 32-bit IF DSP and digital noise reduction and DSP auto notch.
- Large touch-panel precision color display and external display output.
- Rich, sparkling audio quality on both transmit and receive.
- 3DSS (three dimension spectrum stream) waterfall display, an all-new Yaesu exclusive!
- Active band indicator with LED illumination of the operating band: facilitates rapid, mistake-free band changes.
- MPVD (multi-purpose VFO outer dial) provides sub VFO tuning, clarifier operation, VC-TUNE adjustment, VFO fine tuning, or a CS (custom selection) function.
- MP 200-Watt version includes larger heatsink and fan, and uses external speaker/power supply.

Visit HRO  
on the Web  
at  
[hamradio.com](http://hamradio.com)  
to Check  
for  
Special  
Offers

# YAESU

The radio



## FTdx5000MP Limited

SCALL for HRO Price

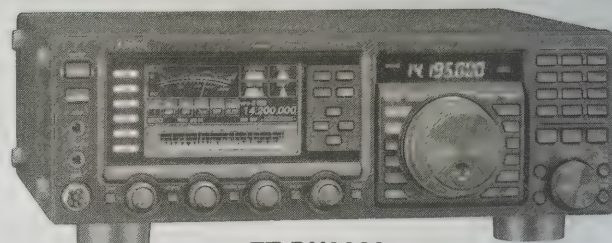
*The FTDX 5000 MP Limited HF / 50 MHz 200 Watt transceiver is a premium class Yaesu radio with two independent receivers plus many unique options and accessories designed to meet the performance requirements of even the most demanding amateur operator.*

- The FTDX5000MP Limited robust and high-power final amplifier stage incorporates two super reliable FETs (VRF-150; drain-source voltage 170 V/gate source voltage  $\pm 40$  V, total device dissipation 300 W) in a push-pull configuration, offering a solid 200 W output (75 W class A operation).
- The FTDX 5000MP Limited has its own built-in power supply (110 / 220 VAC).
- Two (2) totally independent receivers give you performance and flexibility previously only provided by much more expensive radios.
- Super sharp "roofing" filters for VFO-A / main receiver. Filters are selectable between 300 Hz, 600 Hz, 3 kHz (6-pole crystal filter), 6 kHz, 15 kHz (4-pole MCF).
- Variable CW audio peak filter, and high/low-cut filtering created through the very latest in DSP technology. CW width: 50 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 Hz. CW pitch frequency: 300~1050 Hz (10 Hz steps).
- Three electroluminescent clear displays included for easier operation and control of the sub-frequency, graphical wave and menu function.
- 32-bit floating point DSP based on the TI TM-S320C6727B (@300 MHz), one EACH for VFO-A and VFO-B.
- True analog meter precision. Enjoy the huge size metering system and instant reaction time.
- IF output (9 MHz) from VFO-A/main receiver.
- Provides loads of practical level indication that clearly show settings of microphone gain / RF power / CW pitch / keyer speed / processor level / VOX delay time / break-in delay time.
- **SM-5000 Matching Station Monitor.** With the bandscope is a complete, enhanced stereo speaker system with superb audio quality.

### Valuable Option

**Yaesu now offers 3-year factory warranties.**

## HF TRANSCEIVERS



### FT-DX3000

### HF / 50 MHz 100 Watt Transceiver

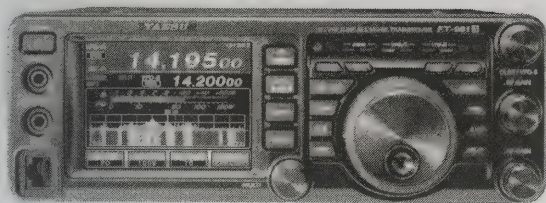
The FT DX 3000 is one of the long line of top-performing Yaesu FT DX transceivers. It inherits the design concepts of the FTdx5000 transceiver that has received high praise from all over the world by those pursuing the highest ideal of amateur HF communication equipment.

The FT DX 3000 exhibits phenomenal multi-signal characteristics first demonstrated in the top-rated FT DX 5000. Using the two signal dynamic range measuring method with 10 kHz signal separation, the FT DX 3000 performance is 108.5 dB, IP3 +37 dBm. With frequency separation of only 2 kHz between the desired signal and an interfering signal, the dynamic range measures 106 dB and IP3 +33 dBm.

With all its features and amazing performance at a truly affordable price, the FT DX 3000 is a terrific rig for home or a DXpedition.

### Yaesu's latest, with amazing receiver performance from its FT-DX5000 heritage

- Covers all amateur radio bands from 160 to 6 meters.
- General coverage reception from 30 kHz to 56 MHz.
- 100 Watt output on all bands.
- FM and AM wide and narrow modes.
- IF DSP for QRM rejection.
- High speed spectrum scope.
- AF scope display.
- RTTY/PSK31 encoder/decoder (optional).
- 3 antenna connectors.
- Built-in high-speed automatic antenna tuner included. The antenna tuner uses LC switching. It has a large capacity 100 channel memory; the tuning data is automatically memorized to reduce tuning time when changing frequency.
- USB interface equipped.
- Wide viewing angle 4.3" LCD display.
- Independent frequency display with wider viewing angle and higher contrast.
- Signal output for an external receiver and 9 MHz IF.
- USB input for firmware updates.
- IF width and IF shift functions.
- Fifteen separate band pass filters.
- 3 kHz roofing filter for SSB and 300 Hz (optional) and 600 Hz roofing filters for CW.
- "Contour" tailors the received audio signal without changing the bandwidth.
- IF notch has attenuation characteristics of 70 dB or more.
- Digital noise reduction by DSP.
- Many CW features including CW audio peak filter, CW decode, CW spot, Auto zero-in display, full break in, four message memory (50 characters each) automatic "beacon" keyer mode and separate key jacks on the front and rear panels.
- Effective QRM rejection is achieved using 32-bit high speed floating decimal point DSP. The signal is processed with the high speed 300 MHz clock frequency.
- Microphone amplifier with parametric equalizer.
- IF DSP speech processor.
- 5 digital voice messages. Each memory channel is capable of storing up to 20 seconds of audio using the optional DVS-6.
- Dimensions 14.4" x 4.5" x 12.3" (W x H x D) and weighs only 22 pounds.
- External control (CAT) is possible using USB or Serial Port; this feature means the FT DX 3000 can be remotely controlled.



## FT-991A Transceiver

HF / 50 MHz / VHF / UHF **C4FM FDMA Digital**  
\$CALL - HRO Discount Price

The next-generation FT-991A now features a real-time spectrum scope and a multi-color waterfall display. The FT-991A operates on SSB, CW, AM, FM, packet, and system fusion C4FM digital. Whether you operate at home, mobile or in the field, the FT-991A will provide outstanding fundamental performance and invite expansion into a full-featured base station. Uncompromising receiver circuit ensures excellent performance from HF to VHF / UHF.

- Receive coverage 160 m through 70 cm.
- Transmits 100 W (HF), 50 W (2 m), 50 W (70 cm).
- 3.5 inch TFT full-color touch panel operation.
- High speed spectrum scope with automatic control built in.
- Roofing filter 3 kHz and 15 kHz.
- Triple conversion with 1st IF frequency of 69.450 MHz on all bands.
- High accuracy TCXO  $\pm 0.5$  ppm.
- Separate RF amps for best characteristic on each band.
- High resolution DDS and PLL local oscillator.
- 32 bit high speed floating point IF DSP.
- IF width and IF shift.
- Contour, DNR, IF Notch. APF for CW only.
- 160-6 m, high speed automatic antenna tuner.
- Full color TFT/LCD display. Four user defined function keys.
- Electronic keying with break-in support, electronic keyer weight control.
- Message memory function.
- 50 tone CTCSS encoder / decoder for FM operation.
- Compatible with optional ATAS-120 Active Antenna System.

**Yaesu now offers 3-year factory warranties.**

## Yaesu HF Specifications

Model	Frequency Range	Power Supply		Current Drain		Power Output				Mike Z ohms	Receive Circuitry	Sensitivity†	FIT / XIT Range	Audio Output	HRO Price
		AC	DC	Xmit	Rec	AM	FM	SSB	CW						
FTDX5000 Series	30 KHz-60 MHz	90-284		5.5 A		50 W	200 W	200 W	200 W	200-10K	Triple	< 2 $\mu$ V	$\pm 9.99$ kHz	2.5 W	CALL
FTDX3000	31 KHz-60 MHz		13.8 VDC	23 A	2.1 A	25 W	100 W	100 W	100 W	200-10K	Double	< 2 $\mu$ V	$\pm 9.99$ kHz	2.5 W	CALL
FT-450D	30 KHz-60 MHz		13.8 VDC	22 A	1.5A	25 W	100 W	100 W	100 W	200-10K	Double	< 25 $\mu$ V	$\pm 9.99$ kHz	2.2W	CALL
FTDX101D	HF-50MHz		13.8 VDC		3.5A	25 W	100 W	100 W	100 W	200-10K	Double	< .16 $\mu$ V		2.5W	CALL
FTDX101MP	HF-50MHz	100-201		720 VA	100 VA	50 W	200 W	200 W	200 W	200-10K	Double	< .16 $\mu$ V		2.5W	CALL
FT-857D	See page 16		13.8 VDC	22 A	1 A	25 W 12.5 W 2m 5W 70cm	100 W 50 W 2m 20 W 70 cm	100 W 50 W 2m 20W 70 cm	100 W 50 W 2m 20 W 70 cm	200-10K	Double	< 2 $\mu$ V	$\pm 9.99$ kHz	2.5 W	CALL
FT-891	30 KHz-56 MHz		13.8 VDC	23 A	2.0 A	25 W	100 W	100 W	100 W	200-10K	Triple	< .158 $\mu$ V HF < 125 $\mu$ V 6m	$\pm 9.99$ kHz	2.5 W	CALL
FT-991A	See product description		13.8 VDC	23 A	2.2 A	2 - 25 W	100 W 50 W 2m 50W 70 cm	100 W 50 W 2m 50W 70 cm	100 W 50 W 2m 50 W 70 cm	200-10K	Triple	< .158 $\mu$ V HF < 125 $\mu$ V 6m < .111 $\mu$ V VHF/UHF	$\pm 9.99$ kHz	2.5 W	CALL

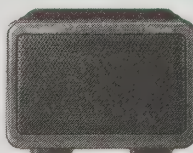
† Sensitivity measurements for 1.8-30 MHz SSB,CW

## FT-891 HF / 50 MHz 100 Watt Transceiver

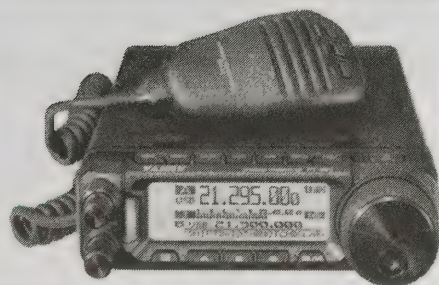
The FT-891 HF All Mode Mobile Transceiver is in a compact package, providing uncompromised performance for both the mobile and stationary Amateur operator. High end 32-Bit floating point DSP enhances the operating experience providing a cleaner, clearer signal and reducing overall operator fatigue creating a more enjoyable environment for any Amateur operator.

- Receiver coverage 30 kHz to 56 MHz.
- FM, AM, CW and SSB.
- 100 W SSB / CW / FM. 25 W AM.
- A native USB connection supports PC connectivity with a single cable, allowing for full rig control via a virtual serial port connection (VCP).
- Large transmit / receive indicator.
- Large diameter Main Tuning Dial (1.6" / 41mm) with torque adjustment.

## SP-10 External Speaker for FT-991A/FT-891

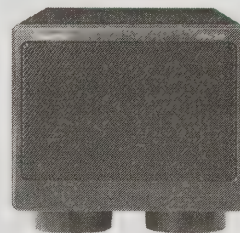


The SP-10 is designed to fit perfectly alongside the popular FT-991A and FT-891. This speaker reproduces the high-quality output sound these receivers generate thereby providing clear and crisp audio for reliable communications on all HF, VHF, and UHF bands. Maximum Input power is 3W. Speaker impedance is 8 ohms. HRO Price \$149.95



- Three programmable front panel function keys.
- Pop-up menu for quick and easy navigation.
- Optional FC-50 antenna tuner.
- Compatible with optional ATAS-120 Active Antenna System.

## SP-20 External Speaker for FTDX3000D



The SP-20 speaker is an attractive match for the FTDX3000D, providing high quality, crisp output sound for reliable communications. Maximum input power is 3W. Speaker impedance is 8 ohms. HRO Price \$169.95

# YAESU

## The radio

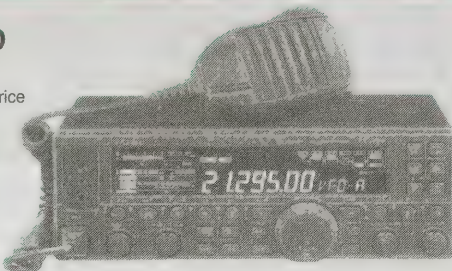
### Compact HF + 6m Transceiver

**FT-450D**

**\$CALL**

HRO Discount Price

Now with  
**DSP-2**  
built-in



The Yaesu FT-450 provides world class performance in an easy to use, compact package. It employs state of the art IF DSP technology to bring an array of advanced features to the operator. Transmit frequency coverage includes 160 to 6 meters. The receive range is 30 kHz to 54 MHz. Power output is 100 Watts on HF and 6 meters. Operating modes include USB, LSB, CW, AM and FM.

- The rig is 9" W X 3.3" H X 8.5" D and weighs 7.9 pounds. Perfect for mobile or portable operation.
- Includes MH-31ABJ hand mic, mic clip and DC power cord.
- Includes 10 kHz roofing filter right after the first mixer, providing narrow band selectivity protection of the IF & DSP stages – rarely found in rigs at this price.
- 400 MHz built-in IF DSP.
- Built-in electronic keyer.
- LCD multi-function display.
- Built-in TCXO  $\pm 1$  ppm/hour (after warmup).
- AFC Fast-Slow-Auto-Off selection.
- Clarifier adjustment.
- Dedicated data jack for FSK-RTTY.
- CTCSS.
- User functions configurable by menu.
- Digital voice announcements of frequency, mode and S-meter.
- 500 regular memories and two voice memories.
- CW beacon function.
- Illuminated key-buttons.

### Programming Kits

#### To Program HF:

YPS-818-USB FT-818

ADMS-4BU-USB FT-857/897

ADMS-450-USB FT-450D

ADMS-991-USB FT-991

ADMS-DX3000-USB FTdx3000

ADMS-DX5000-USB FTdx5000

#### To Program Mobiles:

ADMS-2H-USB FT-8900

ADMS-2900-USB FT-2900,  
FT-2980

YPS-7250-USB FTM-7250

ADMS-M100-USB FTM-100DR

ADMS-M400-USB FTM-400DR

#### To Program Handhelds:

ADMS-1J-USB FT-60R

ADMS-FT2D-USB FT-2DR

ADMS-FT25-USB FT-25R

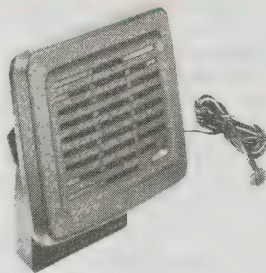
ADMS-FT65-USB FT-65R

ADMS-FT70D-USB FT-70DR

ADMS-VX6-USB VX-6R

ADMS-270-USB FT-270

### Speaker



**MLS-100**

This high-performance communications speaker matches the impedance and output requirements of most Yaesu transceivers. It mounts on a swivel stand that is supplied along with mounting screws and bolts. A 6.5 foot (2 m) audio cable that terminates in a 3.5 mm mono mini plug is also supplied.  
**HRO Price \$46.95**

## HF WITH 2 M / 70 CM

### 6 Watt HF / VHF / UHF Transceiver

**All-Mode  
Portable**

**FT-818**

**\$CALL**

HRO Discount Price



**With SBR-32 MH 1900 mAh NiMH  
Battery and PA-48 Charger**

- Fully self-contained battery-powered low-power amateur transceiver for portable, camping, or mountain use.
- Operates on 160-10 m, HF, 6 m, 2 m, and 70 cm bands.
- Operating modes: USB, LSB, CW, AM, FM, WFM, digital (AFSK), packet (1200 / 9600 FM).
- 208 memory channels / 10 memory groups.
- Improved frequency stability  $\pm 0.5$  ppm: built-in TCXO-9.
- IF shift, IF noise blanker, IPO, ATT.
- CW "semi-break-in," CW reverse, CW pitch control.
- Built-in electronic keyer.
- ARS automatic repeater shift.
- Dual VFOs; split-frequency operation; IF shift; clarifier "R.I.T."; IF noise blanker; RF gain and squelch control; IPO (Intercept Point Optimization).
- Built-in CTCSS encoder/decoders.

### Power Supplies

**FP-1030A**

The FP-1030A is a regulated linear supply at 25 amps and includes meters. **HRO Price \$229.95**



**FP-1023A**

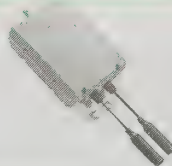
The FP-1023A has 23 amps continuous and 25 intermittent. This low-profile switching power supply operates on 110 or 220 VAC. **HRO Price \$149.95**



### Antenna Tuner

**FC-40**

#### Automatic Antenna Tuner



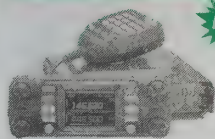
The FC-40 is a microprocessor-controlled antenna impedance matching network designed to provide all-amateur-band transmitting capability with the FT-450D/857D transceivers, when used with an end-fed random wire or long whip antenna. The FC-40 mounts near the antenna feedpoint and makes use of the control circuitry built into the transceiver, allowing the operator to control and monitor automatic operation of the tuner.

- Operating Frequency Range: 1.8 - 54 MHz with 20+ m end-fed wire, 7 - 54 MHz with YA-007 HF 2.5 m Mobile Whip Antenna.
  - Input Impedance: 50-Ohms.
  - Maximum Power: 100 Watts.
  - Tune-up Power: 4 W ~ 60 W
  - Tune-up Time: 10 seconds maximum.
  - Impedance Matching Memories: 100 channels.
  - Power supply: 13.8 V DC  $\pm 15\%$  (supplied from transceiver.)
  - Case Size (WHD): 9.4" x 7" x 2.1" (236 x 175 x 53 mm.)
  - Unit Weight: 2.6 lbs. (1.2 kg.)
  - Shipping weight: 9lbs.
- HRO Price \$274.95**

# ACCESSORIES

# DUAL BAND MOBILES

## 2m / 70 cm Mobile



**NEW!**

### 2 m / 70cm Dual Band C4FM FDMA Digital GPS Bluetooth® Dual RX WIRES-X

#### FTM-300DR

**\$CALL** – HRO Price

The FTM-300DR provides stable and reliable 50W of output power, and is equipped with a heavy-duty heatsink that includes our exclusive FACC (Funnel Air-Convection-Conductor – Wind Tunnel).

- 50W Stable High-Power
- Dual Band Operation (V+V, U+U, V+U, U+V) and Simultaneous C4FM monitoring.
- Large-capacity 1104 channel memory.

- 2-inch High-Resolution QVGA Full-Color TFT Display and Demountable Front Panel Controller.
- Memory Channel Band Auto Grouping Function (AIR, VHF, UHF, GEN).
- High-Speed & High-Resolution Band Scope.
- 3W Audio Power Speaker with two individual terminals for the external speakers.
- Built-in Bluetooth unit for hands-free operation with the SSM-BT10.
- Micro SD Card Slot (up to 32GB).
- Built-in 66ch High precision GPS receiver and External GPS device connectivity.

## Internet Linking Kit



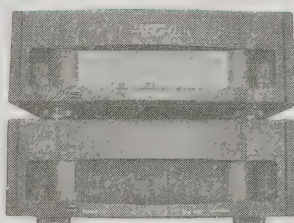
### HRI-200 WIRES-X Internet Linking Kit

**\$CALL** HRO Discount Price

WIRES-X supports both Analog and the new C4FM digital radio communications modes. Yaesu's System Fusion, already the fastest growing Amateur Radio Digital System, is certain to see yet another pique in interest thanks to WIRES-X!

- WIRES-X allows communications between both C4FM digital stations and conventional FM stations via WIRES-X.
- High quality voice communication is achieved by repeating C4FM digital data as it is via the Internet.
- WIRE ID: Adopted a simple user ID system using alphanumeric characters.
- Smart Access: WIRES-X automatically connects to nodes and rooms by utilizing the Smart Access function. (Digital node station only).
- Preset Search: User can find local node station and receive their frequency setting data for automatic setup. (Digital node station only).
- Activity Monitor: IDs of active nodes and rooms can be searched from the C4FM transceiver via a local node. (Digital node station only).
- News Station: Stores and reads digital data such as text, images and audio data. (Digital node station only).
- Supports Analog FM mobile transceiver for Analog node station as well as Digital node station with FTM-400D.

## HF Amp & Power Supply



### Quadra System

**\$CALL** – HRO Price

Here's all the linear amplifier you should need for operation on both HF (160 - 15 meters) and 6 meters. It is designed for automatic band switching with the FT-450, FT-950, FT-2000, FT-1000D, FT-1000MP, FT-920, FT-990, FT-900, FT-991, FTdx1200, FTdx3000 and the FTdx5000 HF radios. The amp features 8 MRF150 power MOSFET transistors designed into 4 units of 2 transistors in a push-pull circuit at 48 VDC.

The included external power supply, the VP-1000, allows for easy installation. There are two input voltages, 117 VAC or 220 VAC. Output power is a function of the power supply voltages. At 220 VAC there is 1000 Watts out on HF and 500 Watts on 6 meters. At 117 VAC the output is 500 Watts on HF. The amplifier comes with a built-in high speed antenna tuner with four antenna outputs and two inputs. The multifunction omni-glow LCD display shows the status of the amplifier. There is automatic system monitoring with VSWR protection.

## 2m / 70 cm Mobiles

### 2 m / 70cm Dual Band C4FM FDMA Digital

#### FTM-100DR

**\$CALL** – HRO Price



The FTM-100DR

VHF/UHF Dual Band Transceiver,

an exciting new way to enter into Yaesu's revolutionary world of System Fusion C4FM Digital Communications.

- 50 Watts on both VHF and UHF.
- Highly visible and compact 160 x 40 pixel graphical dot-matrix display can be detached from the body of the radio and remotely mounted.
- Operates in three (3) Digital modes and one Analog mode.
- Automatic Mode Select (AMS) function that instantly detects the received signal mode.
- V/D Mode (Voice/Data simultaneous communication mode).
- Voice FR mode uses the full 12.5 kHz bandwidth to transmit digital voice data.
- Data FR mode uses the full 12.5 kHz bandwidth for data communication.
- Analog FM is effective when weak signal strength causes audio drop out in the digital mode, and enables communication up to the borderline of the noise level.

### 2 m / 70 cm Dual Band



### C4FM FDMA Digital

#### FTM-400XDR

**\$CALL** – HRO Price

Operate on 2 m and 70 cm with this mobile transceiver. Select power of 50, 20, or 5 Watts on either band. Enjoy wideband receive from 108-470 and 800-999 MHz (less cellular). Four scan modes: VFO, memory, programmable memory, or selected memory. Each memory can store frequency, mode, tag, repeater information, tone, DCS, antenna squelch information, memory skip information, and transmission output. Set the screen background to any of 5 colors (green, blue, orange, purple or gray). Capture images and video by connecting a USB camera (not supplied) and transmit and receive them. There is a port for a microSD card.

- Transmit bands - 2 m / 70 cm.
- Double conversion receiver; twin RX.
- Large color display.
- 500 memories per band.
- Internal clock / calendar.
- Image receive / transmit.
- Enhanced GPS / APRS®.
- 1000 memories in 2 banks; four scan modes.
- Band scope; spectrum scope.
- ARTS™ and optional Bluetooth®.
- Optional voice guide speaks operating frequency and records received signals.

### FT-2980R 2 meters \$CALL — HRO Price



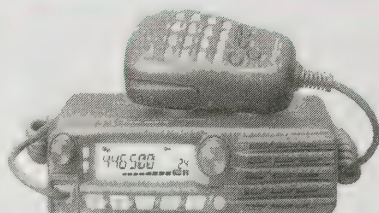
144 MHz 80 Watt FM mobile transceiver - 3 Watts of RX audio, with an MH-48A6JA DTMF microphone. As its model name suggests, the new FT-2980R arrives with the solid feature configuration and mechanical toughness of the ever popular FT-2900R, with even more output power now at 80 Watts!

The FT-2980R four output power settings: 80 W, 30 W, 10 W and 5 W are selectable, allowing each user to choose the power they want for their operating style and situations. A massive heatsink guarantees a solid 80 Watts of RF power with no cooling fan needed. Thanks to a loud 3 Watts of audio output, the operator can enjoy CLEAR reception, even in noisy environments.

Other useful functions included are: Alphanumeric channel display; 200 memory channels; CTCSS and DCS encode/decode built-in; versatile scanning capability; wide/narrow deviation selection, interactive programming menu.

- Frequency range: Transmit: 144 - 148 MHz; Receive: 136 - 174 MHz.
- Double conversion superheterodyne.
- Modulation Type: F3E (FM), F2D (PACK-ET).
- 3-year warranty.
- CTCSS and DCS encode / decode.
- Versatile scanning capability.
- WX channels with "severe weather" alert.
- Smart search operation.
- Wide / narrow deviation selection.
- Interactive programming menu.
- RF-squelch.
- Supply voltage display.
- 4-level display dimmer.

## Dual Band & 70 cm



### FTM-3207 C4FM / FM DIGITAL 70 cm Mobile \$CALL — HRO Discount Price

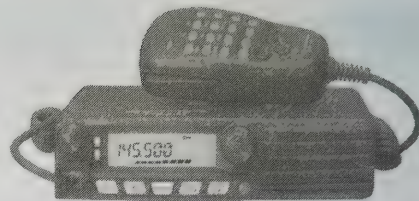
This UHF mobile radio has a receive frequency range of 420-470MHz and a transmit range of 430-450 MHz. It has selectable output power of 55 W / 25 W / 5 W. It comes with the 48A6JA DTMF microphone, USB cable and mounting bracket.

- Advanced digital C4FM operation.
- System fusion compatible.
- AMS (Automatic Mode Select) function automatically recognizes the signal as C4FM digital or conventional FM.
- Sophisticated digital-group-ID operation.
- 221 memory channels with alpha-numeric tags.
- Three-Watt front-facing speaker.



### FTM-7250D C4FM / FM DIGITAL Dual Band 2 M / 70 cm Mobile \$CALL — HRO Discount Price

- 50 Watts for high power transmit with FACC (funnel air-convection conductor — wind tunnel) cooling.
- 3 Watts powerful and clear audio with a front facing speaker.
- Large LED with AMS / mode indicators.
- System fusion II compatible with sophisticated digital group—ID (DG-ID) operation.
- C4FM and conventional FM operation.



### Analog FM 2-meter Transceiver FTM-3100DR \$CALL — HRO Price

The FTM-3100R is a ruggedly built yet compact VHF-FM mobile transceiver, providing high output power of up to 65 Watts. One of the distinguishing features of this mobile transceiver is the Front Panel Speaker delivering 3 Watts of loud and crystal clear audio.

- Frequency Range: Transmit: 144 - 148 MHz, Receive: 136 - 174 MHz.
- Double Conversion Superheterodyne.
- 220 Alpha-Numeric Memory Channels.
- 3-Year Warranty.
- CTCSS and DCS Encode/Decode.
- High Stability TCXO  $\pm 2.5$  ppm).
- Severe Weather Alert.
- DTMF Microphone MH-48A6JA.
- Sensitivity 0.20uV (HAM Wide), 0.22uV (HAM Narrow).
- Output Power: 65 / 30 / 5 W.



### 2 m 65 W C4FM / FM Digital Transceiver FTM-3200DR \$CALL — HRO Price

This rugged yet compact C4FM / FM VHF mobile transceiver, provides output power up to 65 Watts.

- Modulation modes: C4FM digital (V/D mode, VFR mode, DFR mode), FM analog.
- AMS (automatic mode select) function automatically recognizes the signal as C4FM digital or conventional FM.
- Front panel speaker with 3 W of audio output.
- 3-Year Warranty.

- Digital GM (group monitor) function.
- Voice / data simultaneous communication mode.
- Bright multi-colored LED mode / status indicator shows the transceivers' status.
- Illuminated microphone with direct frequency entry.
- 220 memory channels with alpha-numeric tags (maximum 8 characters).
- CTCSS / DCS encode / decode with split tone and DCS encode-only capability.

Yaesu now offers 3-year factory warranties.

# HANDHELDS

## Dual Band & 70 cm



**FT-3DR**  
**SCALL — HRO Price**

The FT-3DR is 5W of RF power output in a light weight, compact design. Battery power-saving settings are available for each frequency band with TX output power levels (5 W / 2.5 W / 1 W / 0.3 W) individually selectable. Enjoy loud, clear C4FM voice quality from 700 mW of audio power. Real dual band operations (V+V, U+U, V+U, U+V) are available with two independent receivers, and the FT-3DR supports simultaneous C4FM digital monitoring for both the A and B bands (C4FM / C4FM standby).

- C4FM digital V/D mode, voice FR mode, data FR mode, and conventional FM mode.
- Built-in Bluetooth unit.
- Highly visible 320 x 240 dot matrix full-color TFT touch panel display.
- Band scope function for monitoring up to 79 channels centered around the current VFO frequency with high-speed.
- CAM (club channel activity monitor) function.
- System fusion II compatible AMS (automatic mode select), DG-ID (digital group ID), and smart navigation functions.
- WiRES-X portable digital node compatible.
- Built-in 66 channel high-sensitivity GPS receiver.
- Snapshot feature.
- Voice recording function for the received and transmitting voice and audio.
- Built-in On/Off timer, automatic power off (APO) and time-out timer (TOT).
- Micro SD card slot (up to 32GB).
- IPX5 rating water protection.

## Yaesu HT Accessories

HANDHELD ACCESSORIES	Model	60R	25R 85R	FT-4XR	VX- 6R	FT- 2DR	FT- 3DR	HRO Discount Price
Microphone Adapter	CT-44	*				*	*	\$16.95
Microphone Adapter	CT-91				*			\$17.95
Bluetooth Headset	SSM-BT10						*	\$34.95
VOX Headset	SSM-64A				*			\$59.95
VOX Headset	SSM-63A	*				*	*	\$69.95
VOX Earpiece Microphone	SSM-512B		*					\$29.95
Speaker/Microphone	MH-34B4B	*				*	*	\$31.95
Speaker/Microphone	MH-57A4B				*		*	\$27.95
Speaker/Microphone	MH-73A4B				*			\$47.95
Compact Speaker/Microphone	SSM-17B		*	*				\$24.95
Camera/Microphone	MH-85A11U					*	*	\$134.95
Ear Piece Microphone	SSM-55A				*			\$39.95
Ear Piece Microphone	SSM-57A	*				*	*	\$34.95
DC/DC cigar adapter	SDD-13	*			*	*	*	\$27.95
DC/DC adapter	EDC-6	*			*	*	*	\$8.95
Wall Charger	SAD-24B	*			*	*		\$28.95
Wall Charger	SAD-25B						*	\$29.95
Slow Wall Charger	SAD-18B					*		\$24.95
AC Adapter	SAD-26B		*					\$19.95
Rapid Charger	CD-15A			*	*			\$39.95
Charger Cradle	SBH-13	*						\$23.95
Rapid Charger	SBH-22		*	*				\$19.95
Charger Cradle	CD-26							\$25.95
Charger Cradle	CD-41					*	*	\$37.95
Desk Top Rapid Charger	VAC-370	*						\$74.95
Battery 1400 mAh	FNB-80LI				*			\$74.95
Battery 1300 mAh 7.4 V	FNB-83	*						\$35.95
Battery 1100 mAh 7.4 V	FNB-101LI					*	*	\$52.95
Lithium ion 2200mAh	SBR-14LI					*	*	\$79.95
Lithium ion 1950mAh	SBR-25LI		*					\$34.95
Lithium ion 1950mAh	SBR-26LI		*					\$44.95
Lithium ion 1750mAh 7.4 V	SBR-28LI			*				\$35.95
Battery case AA batteries	FBA-23				*			\$29.95
Battery case AA batteries	FBA-25	*						\$18.95
Battery case AA batteries	FBA-39					*	*	\$31.95
Cloning Cable	CT-27	*						\$14.95
Cloning Cable	CT-168					*	*	\$24.95
Cloning Cable	SCU-36		*	*				\$19.95
Programming Cable	SCU-35		*	*				\$19.95
Programming System	YPS-FT3D						*	\$48.95
Data Cable(Deub>9 pin)	CT-169					*	*	\$36.95
Data Cable(11 pin>2.5)	CT-170					*	*	\$29.95
Data Cable(2.5>2.5)	CT-176					*	*	\$24.95
WiresX Cable	SCU-39						*	\$59.95
Ant Adapt SMA - BNC	CN-3	*			*	*	*	\$8.95
Radio Case (soft)	CSC-91				*			\$16.95
Soft Carry Case	SHC-24					*		\$19.95
Soft Carry Case	SHC-34						*	\$24.95

## Yaesu Handhelds

Model	Frequency	Mode	Pwr Supply	Power Out	Current Transmit	Drain Receive	Sensitivity	Height in (cm)	Width in (cm)	Depth in (cm)	Weight oz (g)	HRO Price
FT-60R	2m/70 cm	FM	7.2 VDC	5 W	1.5 A	125mA	.16 $\mu$ V / 12dB	4.3 (10.9)	2.3 (5.8)	1.2 (3.0)	13.5(370)	CALL
FT-65R	2m/70 cm	FM	7.4 VDC	5/2.5/0.5 W	1.5A1.7A	205mA	.2 $\mu$ V / 12dB	4.1 (10.4)	2.5 (5.2)	1.2 (3.0)	9.17(260))	CALL
FT-3DR	2m/70 cm	FM	7.4 VDC	5/2.5/1/3 W	1.9A	170mA	.2 $\mu$ V / 12dB	3.95(10)	2.44(6.2)	1.28(3.2)	9.95(282)	CALL
FT-4XR	2m/70 cm	FM	7.4 VDC	5/2.5/0.5 W	1.5/1.7A	190mA	.2 $\mu$ V / 12dB	3.5(9.0)	2.1(5.2)	1.2(3.0)	8.82(250)	CALL
VX-6R	2m/70 cm @#	FM	7.4 VDC	5 W	1.5/1.6/1.8 A	150mA	.16 $\mu$ V / 12dB	3.4 (8.7)	2.3 (5.8)	1.1 (2.8)	9.5(270)	CALL
FT-2DR	2m/70 cm	FM/AM	7.4 VDC	5 W	1.7 A	240mA	.16 $\mu$ V / 12dB	4.3 (10.9)	2.4 (6.2)	1.2 (3.2)	10.9(310)	CALL
FT-25R	2m	FM	7.4 VDC	5/2.5/0.5 W	1.5 A	205mA	.2 $\mu$ V / 12dB	4.1 (10.4)	2.5 (5.2)	1.2 (3.0)	9.17(260))	CALL
FT-70DR	2m/70 cm #	FM	7.4 VDC	5/2/0.5 W	1.6 A	180mA	.16 $\mu$ V / 12dB	2.36(6.0)	3.86(9.8)	1.3(3.3)	8.99(255)	CALL

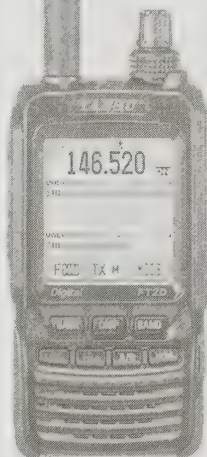
\*Power output can be increased depending on the battery pack selected. #Extended Rx range @Cell phone blocked. \*\*2 and 6m 4.5 W UHF.  
††1.5 W 2m/1 W UHF. \*\*\*1.5 W on 220 MHz

## The radio

### FT-2DR 2 m / 70 cm C4FM FDMA Digital \$CALL

HRO Discount Price

The FT-2DR backlit touch panel display provides a high level of on-screen visibility for the operator. It has Yaesu's AMS capability to recognize either digital or FM analog signals. The FT-2DR can now operate as a Wires-X Portable Node Station with the latest firmware update to the FT-2DR, the latest Wires-X PC software, and the new SCU-39 cable kit.

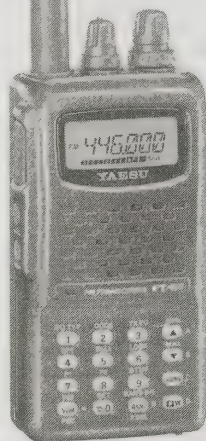


- 5 Watts out at 7.4 VDC.
- System Fusion.
- C4FM digital V/D mode, voice FR mode, data FR mode and regular FM.
- 700 mW audio.
- Snapshot function with image data display on LCD and transmitting image data capability.
- Built-in high sensitivity 66 channel GPS with antenna.
- Backtrack function to return to starting point.
- Smart navigation.
- 1245 memory channels.
- AF dual monitor capability.
- Wideband receive capability 0.5 - 999 MHz (USA cellular blocked).
- 1200 bps 9600 bps APRS built-in.
- Has micro SD card slot with GPS logging.
- High capacity lithium-ion battery.



### FT-60R 2 m 70 cm

Extensive  
Receive  
Frequency  
Coverage



### Emergency Automatic ID for Search & Rescue

Receives 108-520 MHz and 700-999 MHz (cellular blocked) for monitoring amateur, public safety, business, marine, aircraft, government communications.

- Tough die-cast, water resistant construction.
- 1000 memories w/alphanumeric labels.
- 5 Watt output.
- CTCSS and DCS (encode/decode) with split tone; DCS encode only capable.
- ARTS™.
- One-touch to NOAA.
- Nine DTMF auto-dial memories.
- WIRES™ Internet linking.
- Huge LCD display.
- Two front panel programmable keys.
- Automatic repeater shift.

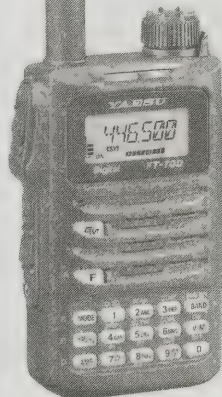
## DUAL BAND HTS

### FT-70DR 2 m / 70 cm C4FM FDMA Digital

The new FT-70DR is the compact and very attractively priced Yaesu System Fusion transceiver with both conventional FM operation and the advanced C4FM digital mode.

The FT-70DR provides up to 5W of reliable RF power, and its large front speaker delivers 700 mW loud audio output. C4FM has better BER (Bit Error Rate) characteristics than other digital modulations, and thanks to it, the audio quality is exceptional.

The new digital FT-70DR naturally utilizes the automatic mode select (AMS) function. AMS detects the operating mode of the received signal as C4FM digital or FM analog, and automatically and instantly switches the receiver to the appropriate mode. Users do not need to manually change between modes.



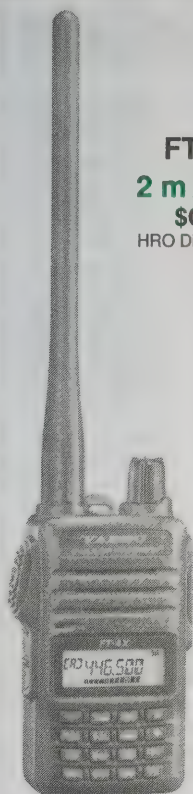
Multi-colored LED mode-indicator equipped on its front case also assists an operator to enable hassle-free operation with AMS. This indicator clearly and visibly shows the transmit / receive mode by changing its color, and the operating mode of the transceiver is easily recognized at a glance.

Another distinguishing feature of the FT-70DR is digital group monitor (GM) with DG-ID and DP-ID. DG-ID (Digital Group Identification) and DP-ID (Digital Personal Identification) are the useful features newly included in the FT-70DR to simplify the GM operation. Very simply, the transceivers selecting the same DG-ID or DP-ID can communicate, but not others. Between 00 and 99 DG-ID and DP-ID are selectable, and users can enjoy group communication with friends in GM mode according to their operation needs.

Other included standard features and functions are; IP54 rating (dust / water protection) construction, wide band receive coverage of 108 - 579.995 MHz, versatile scanning capabilities such as programmable VFO scan, memory scan, and priority channel scan, external DC jack for DC supply operation and battery charge, mini USB port for convenient memory management and software updates, CTCSS/ DCS operation, automatic power off (APO) feature, RF squelch, transmitter time out timer (TOT) and busy channel lock-out (BCLO).

- System Fusion compatible.
- 700 mW audio output.
- Wide band receive coverage of 108 - 579.995 MHz.
- 1,105 channel memory.
- CTCSS / DCS operation.
- Large multi-color mode indicator.
- Versatile scanning capabilities (programmable VFO, memories, & priority channel scans).
- 7.4 V 1,800 mAh Lithium Ion battery pack (SBR-24LI) Included.
- WX channels with "severe weather" alert (US version).
- RF Squelch.
- Mini USB port for memory management and software updates.
- Transceiver-to-transceiver cloning with optional cloning cable (CT-27).
- Automatic power-off feature, RF squelch, transmitter time out timer, and busy channel lock-out.
- IP54 rating (dust / water protection) construction.
- Equipped with mini USB port for convenient memory management & software updates.

# HANDHELDS

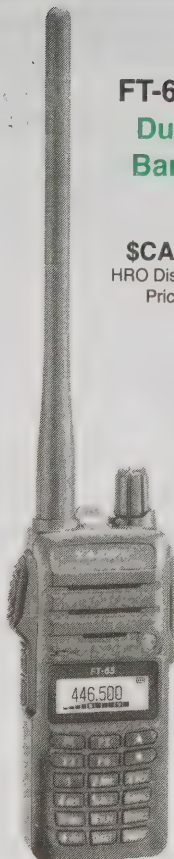


**FT-4XR**  
2 m / 70 cm  
\$CALL  
HRO Discount Price

The FT-4XR is the ultimate in compact designed (W 2.1" x H 3.5" x D 1.2") handheld transceivers, providing up to 5 W of stable and reliable output power thanks to Yaesu's integration of highly-efficient Bridged Transless (BTL) amplifier technology.

The FT-4XR handheld transceiver has a 1.4-inch front speaker (no s here) that delivers (s here) 1W of powerful clear and crisp intelligible audio.

- Three selectable TX power settings: 5 W (high) / 2.5 W (middle) / 0.5 W (low).
- More than 15 hours operating time with supplied 1,750 mAh Li-ion Battery pack.
- Large-capacity 200 memory channels.
- Selectable frequency steps (5 / 10 / 12.5 / 15 / 20 / 25 / 50 / 100 kHz).
- WX channels with "severe weather" alert.
- PC programmable with optional programming cable (SCU-35).
- Transceiver-to-transceiver cloning with optional cloning cable (SCU-36).



**FT-65R**  
Dual  
Band

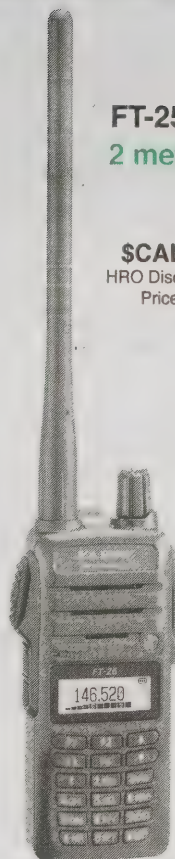
\$CALL  
HRO Discount  
Price

These handheld transceivers share the same set of features and are identical in appearance but they have different operating frequency range coverage.

## Features:

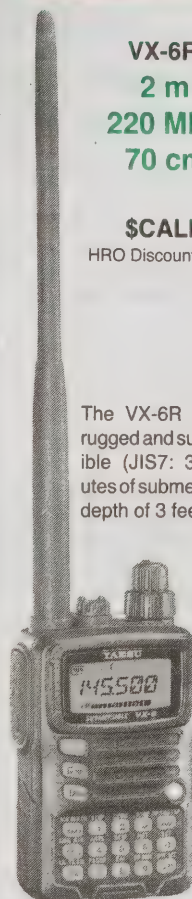
- Selectable output power settings - 5 W / 2.5 W and 0.5 W.
- Speaker provides 1 Watt audio input.
- Supplied 1950 mAh Li-ion battery pack provides more than nine (9) hours operation. Optional higher capacity 2500 mAh Li-ion battery pack provides more than 11.5 hours of operation.
- LED displays.
- Four (4) quick recall keys (QRK) are individually user-programmable to store and recall favorite frequency settings and to be used as short-cut keys to set mode menu items.
- White LED flashlight.
- Programmed VFO scan, memory scan, priority channel scan, weather alert scan.
- WX channels with "severe weather" alert (US Version).
- VOX operation.
- FM broadcast receiver.
- ARTS (automatic range transponder system).
- DTMF operation - CTCSS / DCS operation.
- Busy channel lock-out.
- Battery saver function.
- Automatic power-off.
- Transmitter time-out-timer.

**Yaesu now offers 3-year  
factory warranties.**



**FT-25R**  
2 meter

\$CALL  
HRO Discount  
Price



**VX-6R**  
2 m  
220 MHz  
70 cm

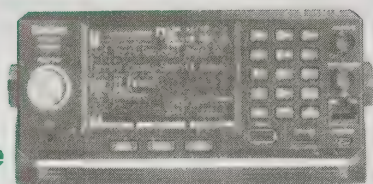
\$CALL  
HRO Discount Price

The VX-6R is both rugged and submersible (JIS7: 30 minutes of submersion at depth of 3 feet).

- Covers 504 kHz to 998.99 MHz (with cell blocked).
- 5 Watts of power 144 and 440 MHz bands; 1.5 W on 222 MHz.
- One-touch memory access.
- FNB-80LI 1400 mAh lithium-ion battery pack standard.
- Emergency automatic ID.
- Security password.
- CW trainer.
- Enhanced paging and code squelch (EPCS).
- Wake-up battery saver.
- 900 memories with alphanumeric labels.
- Compact: measures just 2.3" x 3.5" x 1.1" WHD.
- Oversized volume and squelch knobs.

**Call for  
Quotes**

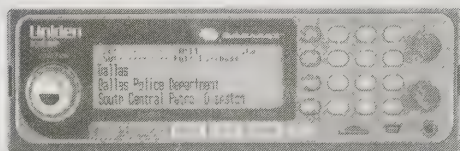
## SDS-200 Base / Mobile



### True I.Q™ Trunk Tracker X

**\$699.99** – HRO Price

- True I.Q™ receiver.
- TrunkTracker X.
- Direct ethernet connectivity for streaming and control.
- Complete USA / Canada radio database.
- Location control for simple operation.
- External speaker jack.
- Auxiliary USB type A jack for future expansion.
- 3.5" customizable color display.
- GPS connectivity for simple mobile operation.
- Recording, playback, and replay.
- PC programming & control.

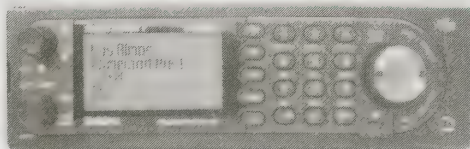


### BCD-536HP TrunkTracker V Mobile

**\$599.95** – HRO Price

- APCO 25 Phase I / II.
- Motorola, EDACS, LTR trunking.
- HomePatrol operation.
- WiFi Link for remote operation.
- USA / Canada radio database.
- Zip Code selection.
- Fire tone-out alert.
- Temporary avoid.
- CloseCall® RF capture.
- System channel / number tagging.
- DCS/CTCSS rapid decode.
- Audio AGC.
- S.A.M.E weather alert.
- Backlit keypad & LCD.
- 4 GB memory.
- Enhanced dynamic memory.
- USB connectivity.
- PC programming and cloning.
- Covers 25-512, 758-824, 849-869, 894-960, 1240-1300 MHz.
- Includes antenna, DC adapter, USB cable, three-wire harness, mounting bracket and hardware.

### Mobile Trunking Scanner with GPS Support and APCO-25



**BCD-996P2 \$449.95** – HRO Price

- 25,000 dynamically allocated channels.
- Location-based scanning.
- TrunkTracker V.
- APCO 25 Phase I & II.
- Links to optional GPS.
- Dual color display.
- Multi-site trunking support.
- Temporary lockout.
- Dangerous crossing or road and POI alert.
- DIN-E mounting.
- Close-Call™ RF capture technology.
- Public safety scanner.
- PC control/programming (free download).
- USB connector.

## Handheld Scanners

### BCD-436HP TrunkTracker V Handheld

**\$499.95**  
HRO Price



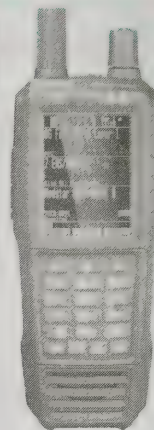
- APCO 25 Phase I / II.
- HomePatrol operation.
- 4 GB memory.
- USB connectivity.
- CloseCall® RF capture.
- Audio AGC.

- S.A.M.E weather alert.
- Backlit keypad & LCD.
- Motorola, EDACS, LTR trunking.
- USA/Canada radio database.
- Enhanced dynamic memory.
- System channel / number tagging.
- DCS/CTCSS rapid decode.
- PC programming and cloning.
- Covers 25-512, 758-824, 849-869, 894-960, 1240-1300 MHz.
- Includes antenna, USB adapter, 3AA NiMH batteries, hand strap, SMA-BNC antenna adapter.

**More info @**  
[www.hamradio.com](http://www.hamradio.com)

### SDS-100 I/Q Scanner With Software Defined Radio Technology

**\$649.99**  
HRO Price



Uniden has created the first scanner to incorporate Software Defined Radio technology. The SDS100's digital performance is better than any other scanner in both simulcast and weak-signal environments.

This is the first scanner that allows you to decide what to display, where, and in what color. Custom fields put the information important to you right where you need it.

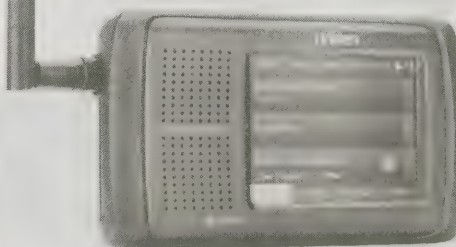
Of course, the SDS100 also includes all the advanced features you've come to expect from a Uniden scanner: Trunktracker X, weather alerts, APCO P25 Phase I and II, location-based scanning, and USA / Canada radio database. It meets JIS4 (IPX4) standards for water resistance.

## Mobile Scanner

### Home Patrol II

**\$699.95** – HRO Price

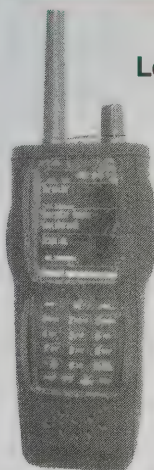
- Digital touch screen scanner.
- USA & Canada database.
- APCO Project 25 Phase I & II.
- USB-source charging.
- No subscription.
- Simple programming
- Enter your zip code to select channels in your area.
- 3.5" daylight viewable display.
- Sentinel Windows PC software included.
- S.A.M.E. emergency / weather alert.
- TrunkTracker IV.



- Monitor public safety, local government, amateur radio operators, and more.

# SCANNER MASTER

## Carrying Cases



### Protective Leather or Nylon Scanner Cases

Protect your portable scanner investment with these rugged, attractive, form-fitting cases designed specifically for each scanner model. Scanner Master offers three types: Hard leather (for the most protection), soft leather, and nylon with different belt attachments as noted below.

#### Bearcat SDS100 Cases

(all with swivel belt clips for professional swivel and quick release):

Hard Leather Case: **HRO Price \$39.95**

Soft Leather Case: **HRO Price \$39.95**

Nylon Case: **HRO Price \$29.95**

#### Bearcat BCD436HP Cases

(all with swivel belt clips for professional swivel and quick release):

Hard Leather Case **HRO Price \$39.95**

Soft Leather Case: **HRO Price \$39.95**

Nylon Case: **HRO Price \$29.95**

#### Bearcat BCD325P2, BC125AT, BC75XLT Cases

Hard Leather Case (Fixed Belt Clip):

**HRO Price \$39.95**

Soft Leather Case (Swivel Belt Loop):

**HRO Price \$39.95**

Nylon Case (Fixed Belt Loop):

**HRO Price \$29.95**

#### Whistler WS-1040

#### RadioShack Pro-106 & 651 Cases

Hard Leather Case (Swivel Belt Loop):

**HRO Price \$49.95**

Soft Leather Case (Swivel Belt Loop):

**HRO Price \$39.95**

Nylon Case (Fixed Belt Clip):

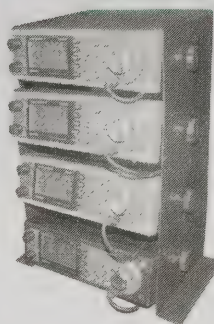
**HRO Price \$29.95**

**Find SWL and  
Scanner Antennas  
on Page 102.  
Books on Page 51.**

# SCANNER ACCESSORIES

## Desk Mounts

(Radios not included)



#### DESK-MT-BASE-4

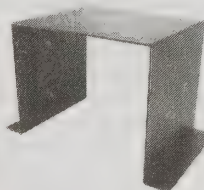
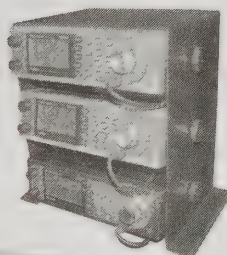
Desk mount for 4 base scanners.

**HRO Price \$79.95**

#### DESK-MT-BASE-3

Desk mount for three base scanners.

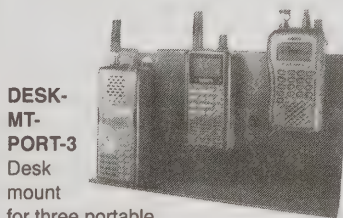
**HRO Price \$69.95**



#### DESK-MT-BASE-2

Desk mount for two base scanners.

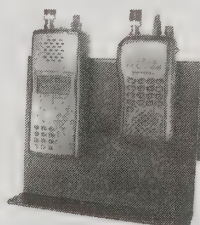
**HRO Price \$59.95**



#### DESK-MT-PORT-3

Desk mount for three portable scanners.

**HRO Price \$59.95**



#### DESK-MT-PORT-2

Desk mount for two portable scanners.

**HRO Price \$49.95**

#### DESK-MT-PORT-1

Desk mount for one portable scanner.

**HRO Price \$39.95**



## Scanner Software

### BuTel

#### Scanner Programming Software

Scanner Master is the US distributor of the very popular Butel line of scanner software.

With Butel software you can remotely program your scanner through its easy-to-use "Basic" software interface which includes a powerful Radio-Reference.com direct download feature (RR user account required).

The Butel "Pro" software also includes full virtual control, audio recording and data logging.

#### ARCXT Software

(for the Bearcat BCD325P2, 396XT, 996P2, 996XT, 15X)

ARCXT Basic: **HRO Price \$39.95**

ARCXT Pro: **HRO Price \$69.95**

#### ARC536 Software

(for the Bearcat SDS100, SDS200, BCD436HP, BCD536HP)

ARC536 Basic: **HRO Price \$39.95**

ARC536 Pro: **HRO Price \$69.95**

#### ARC500 Software

(for the Whistler WS-1040 & 1065; GRE PSR-500 & 600; RS Pro-106, 197, 651, 652)

ARC500 Basic: **HRO Price \$34.95**

ARC500 Pro: **HRO Price \$69.95**

## SDR Switch



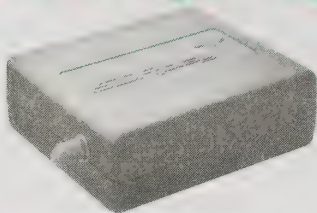
### SDR Transmit / Receive Switch

**MFJ-1708BSDR**

An inexpensive wide-band SDR receiver presents everything on a band like a panadapter! If you want to know where the activity is, who's generating splatter, what's in the DX window, how wide your audio is or what frequencies are clear, it's all right there! During receive the MFJ-1708BSDR switches your SDR to your antenna letting you see the entire band on your display. On transmit your SDR is switched out and grounded to protect your SDR. PTT and a failsafe RF sense circuit switches MFJ-1708BSDR. For HF / VHF / UHF. **HRO Price \$109.95**

# SOFTWARE DEFINED RECEIVERS

## SDRplay

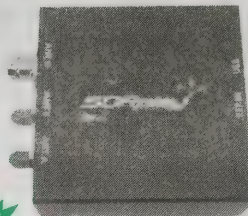


### SDR Receiver RSP1A Radio Spectrum Processor

**\$119.95** HRO Discount Price

The RSP1A is a powerful wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz. All it needs is a PC and an antenna to provide excellent communications receiver functionality. Combined with the power of readily available SDR software, such as SDRuno, you can monitor up to 10 MHz of spectrum at a time. Other SDR software is available for most OS platforms (including Linux, Mac, Raspberry Pi). Third party software is also available to allow reception of various digital modes or to implement panadapter functionality for any CAT controllable rig.

- Continuous coverage from 1 kHz to 2 GHz
- Up to 10 MHz visible bandwidth.
- Powers over the USB cable with a simple type B socket.
- 14-bit ADC silicon technology (not another 8 bit dongle!)
- 11 high-selectivity, built in front-end pre-selection filters.
- Software selectable AM/FM and DAB broadcast band notch filters.
- Software selectable multi-level low noise preamplifier.
- Bias-T power supply for powering antenna-mounted LNA.
- RF shielding layer inside case
- SDRuno—world class Windows SDR software.
- Documented API for new apps development.
- Single SMA antenna socket covering entire frequency range.



### RSPdx

### Radio Spectrum Processor

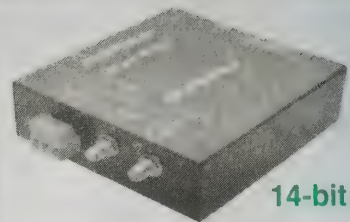
**\$199.95** HRO Discount Price

The RSPdx is a major upgrade to the popular RSP2 and RSP2pro multi-antenna receiver design. It's a wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz. Combined with the power of readily available SDR receiver software (including SDRuno supplied by SDRplay) you can monitor up to 10 MHz spectrum at a time. The RSPdx provides three software-selectable antenna inputs, and an external clock input.

#### Now including SDRuno SDR software:

Integrated scanner and diversity software. The benefits of using SDRuno software include:

- Highly integrated native support for the RSP family.
- Diversity tuning with the RSPduo.
- Fully integrated frequency scanner for all RSPs.
- Calibrated S meter including support for IARU S meter standard.
- Calibrated RF power meter with more than 100 dB of usable range.
- Best in class audio quality.
- Additional design optimization for demanding reception conditions below 2 MHz.
- Software selectable choice of 3 antenna ports (2 x SMA and 1 x BNC).
- Enhanced ability to cope with extremely strong signals.
- External clock input for synchronization purposes, or connection to GPS reference clock for extra frequency accuracy
- Excellent dynamic range for challenging reception conditions.
- Calibrated S meter / RF power and SNR measurement with SDRuno.
- Enclosed in a rugged black painted steel case.



14-bit SDR

### SDRduo Dual Tuner

**\$279.95** HRO Discount Price

The SDRplay RSPduo is a dual-tuner wideband full-featured 14-bit SDR which covers the entire RF spectrum from 1 kHz to 2 GHz, giving 10 MHz of spectrum visibility. Combined with SDRuno software for Windows, you can simultaneously monitor two completely separate 2 MHz bands of spectrum anywhere between 1 kHz and 2 GHz. The RSPduo provides three software selectable antenna inputs and clocking features ideally suited to industrial, scientific and educational applications. All it needs is a PC and an antenna to provide excellent communications receiver functionality. A documented API allows developers to create new demodulators or applications around the platform.

- Dual tuners provide independent coverage 1 kHz to 2 Hz using 2 antenna ports simultaneously.
- 14-bit ADC silicon technology (not another 8 bit dongle!).
- Up to 10 MHz visible bandwidth (single tuner mode) or 2 slices of 2 MHz spectrum (dual tuner mode).
- 3 software-selectable antenna ports (2 x 50 Ohms and 1 x 1k Ohms high impedance balanced/unbalanced input).
- High impedance antenna port (1 kHz to 30 MHz) with selectable MW notch filter and choice of 2 pre-selection filters.
- Software selectable AM/FM and DAB broadcast band notch filters for the two SMA antenna (1 kHz to 2 GHz) ports.
- External clock input and output enables easy synchronisation to multiple RSPs or external reference clock.
- Powers over the USB cable with a type B socket.
- 11 high-selectivity, built in front-end preselection filters on both the 2 SMA antenna ports.
- Software selectable multi-level low noise pre-amplifier.
- Bias -T power supply for powering antenna-mounted LNA.
- Enclosed in a rugged black painted steel case.
- SDRuno—world class SDR Windows software. Open API for new apps development.

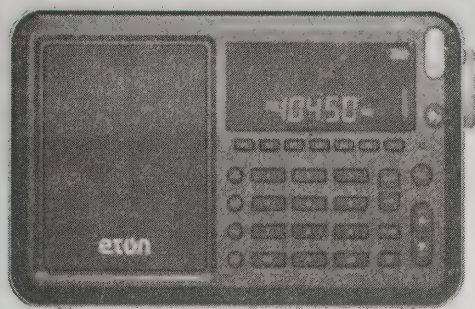
## Scanning Software

### SDRuno Version 1.3

The latest version (v1.3) of the SDRuno software introduces a fast frequency scanner for SDRplay products. This update makes SDRuno the first fully featured SDR package with integrated frequency scanning. The scanner has 2 modes; it can scan an arbitrary frequency range with a user-defined step size or it can scan through a list of frequencies from the user's memory panel. It can automatically store found signals to the memory panel, has a number of built in pre-sets (including the marine and air-bands), and has the ability to both wait on signal and hold for a period of time on a signal. The latest version of SDRuno can be found on SDRplay's downloads page: <https://www.sdrplay.com/downloads>

## Support Catalog

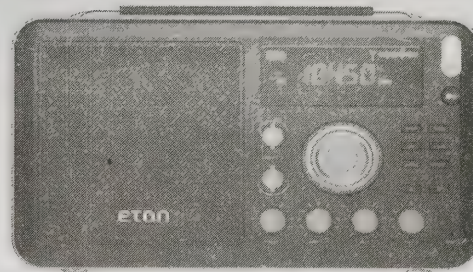
A complete catalog of available how-to videos and app notes is now available. Topics covered include basic "getting started" videos, how to use 3rd party add-on software, implement a pan-adapter, optimize the performance of your RSP, and selected third-party and foreign language material. All this can be found at: <https://www.sdrplay.com/apps-catalogue>



## Executive Satellite \$199.95 - HRO Price Five Decades of Excellence

The Satellit series keeps getting better and better. The latest arrival, the Etón Satellit, is no exception. This latest innovation delivers the best performance in radio reception and audio quality and it's got the looks and style to match. The Executive Satellit receives every radio wavelength—AM (MW), FM with RDS, LW, and Shortwave (SW). Plus, it also receives VHF aircraft band, single sideband (SSB) and includes a PLL tuner so your AM signal is strong and clear. It has a leather case with craftsman stitching for ultimate portability.

- The sync detector improves sound quality by lowering distortion and fading. It's sensitive to pick up weaker signals.
- RDS for FM shows you the station's call letters, style of music, song title, artist and more.
- Uses DSP technology to enhance sensitivity and selectivity.
- 360 degree rotating AM antenna.
- Auto / manual / direct frequency key-in and station memory tuning.
- Mute function.
- 12K AM output socket.
- Auto tuning storage function (ATS) for FM / AM / shortwave.
- 1000 station memories (each band 100 memories, 500 customizable).
- External antenna jacks for both AM and FM.
- Headphone jack. Connect any audio device using the line input.
- Line out socket (transfer radio broadcasting to other devices).
- It features local and world time settings, radio and buzzer alarm clock settings, sleep timer, and time backup. The bright orange LCD display with backlighting makes it easy to keep time...in any zone.
- Dual alarm clock.
- USB (5 V) outlet for MP3 or mobile phone charging function.
- AC/DC 6V power supply included.
- Plug in the AC adapter (included) for full power or use 4 AA batteries (sold separately). The battery strength indicator on the display will let you know when it's time for a change.



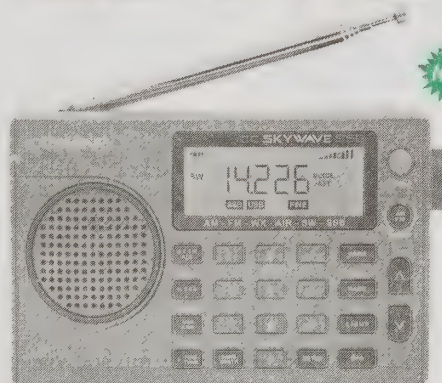
## Field BT \$129.95 HRO Price

### AM / FM / Shortwave Radio

Field -BT receives almost every radio wavelength—AM (MW), FM, and Shortwave (SW)—at home or abroad. And it's easy to set the station spacing and frequency so your stations come in loud and clear wherever you are.

- High sensitivity, strong anti-interference, low background noise, and even lower distortion.
- Wide/narrow bandwidth selection improves audio fidelity and minimizes noise. Listen out loud or plug in your favorite headphones.
- The Radio Data System (RDS) enables FM broadcasters to deliver more than just an analog audio signal, but also digital data like the station's call letters, style of music, song title, artist and more.
- Local and world time settings, radio and buzzer alarm clock settings, sleep timer and snooze light
- Use 4 D batteries (not included) or plug in the supplied AC adapter into the DC jack.

## C.CRANE

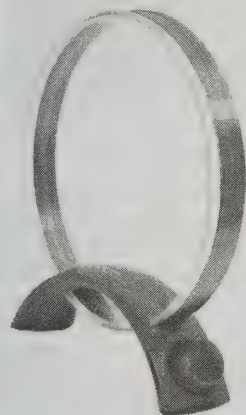


## CC SkyWave SSB \$149.95 HRO Price

### AM FM SW WX Aviation And SSB Bands

You can now listen to Hams, long range aviation (commercial and military), maritime, space and even spy transmissions from all over the world. Single Side Band is an efficient and reliable way to get long range information without Internet or satellite and it's not available on your smartphone. Ham radio operators play a critical part in emergencies when virtually all normal communication is down.

- Direct entry of a frequency plus auto scan and store.
- Lighted LCD display.
- Selectable fast or fine tuning on all bands except weather.
- 400 memory presets.
- Runs on (2) AA Alkaline batteries (not included).
- (Optional) CC Skywave AC power adapter.
- Stereo headphone jack and fold-out back stand.
- Clock with 12/24 hour format, Alarm.
- Rotary volume knob.
- One Year Limited Warranty.



## Tunable Passive AM Radio Loop Antenna

520 KHz - 1,510 KHz

AN-200

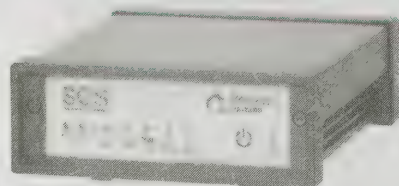
\$24.95 - HRO Price

Use with external antenna capable radios. Plug the AN200 into the antenna input of your radio or place loop as close to the sound system as possible for better reception. First, tune the radio frequency, then fine-tune by adjusting the control knob on the AN200. Move the loop around to find the best reception. 8.5" x 2.9" x 10.25" (W x H x D)

**Free Ground Shipping  
on Most Orders Over \$100**

# Farallon Electronics

## PACKET / DATA / APRS



### PACTOR-4 DR-7400

HRO Price \$1628.95

The DR-7400 offers a lower priced entry to the P4dragon modem class. The DR-7400 has been optimized for use with the new high-end data transmission mode PACTOR-4.

The DR-7400 is software compatible to the PTC-II series and to the DR-7800 so that existing PACTOR software (AirMail, RMS Express, Alpha etc.) can continue to be used.

Due to the plug compatibility of the radio ports, a change from the tried and tested PTC-II technology to the innovative P4dragon technology is very easy. Change over the plugs, turn on, and enjoy PACTOR-4!

- Has many of the same features as the DR-7800.
- Backwards compatible to PACTOR-1/2/3. Automatic negotiation during link setup.
- Noticeably improved reception with PACTOR-2 and PACTOR-3.
- Operating Modes: PACTOR-4, PACTOR-3, PACTOR-2, PACTOR-1, weather-FAX (receive), GPS / RTTY / NAVTEX decoder.



### PACTOR-4 DR-7800

HRO Price \$1848.98

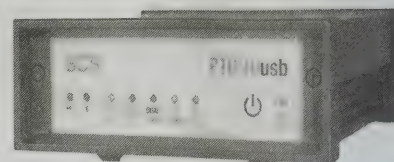
The DR-7800 P4dragon is the no compromise further development of the legendary PTC-II, which was designed for professional use and for the ambitious amateur radio enthusiast. The DR-7800 has been optimized for use with the new high-end data transmission mode PACTOR-4.

The DR-7800 is software compatible to the PTC-II series so that existing PACTOR software (AirMail, RMS Express, Alpha etc.) can continue to be used.

- Operating Modes: PACTOR-4, PACTOR-3, PACTOR-2, PACTOR-1, weather-FAX (Receive), GPS decoder.
- Display: 256 x 64 pixel OLED, blue, high contrast, excellent readability, no viewing angle problems, display of spectrum and much more.

### PACTOR-4

- Max net speed 10500 bps.
- 1.5-3 x faster than P3.
- Backwards compatible.
- 2400 Hz bandwidth.
- Highly adaptive.
- Highly resistant to interference.
- 6 auto notches.
- Adaptive equalizer.



### PTC-IIIusb

HRO Price \$1248.95

As successor to the beloved PTCIIusb it is mainly designed for PACTOR-III, thus allowing worldwide E-mail traffic via shortwave. It is also suitable for all other available modes, e.g. with Packet Radio, RTTY, weather FAX reception or decoding CW.

The PTC-IIIusb is software compatible to the PTC-IIIusb so that existing software (AirMail, RMS Express, Alpha etc.) can continue to be used.

The PTC-IIIusb is not only an excellent HF-modem but also a powerful multimode controller. It supports the following modes: PACTOR-I/II/III, PR, (also RPR), RTTY, CW, PSK31, FAX, SSTV, AMTOR, NAVTEX, APRS®-Beacon.

Remote control your transceiver directly from the PTC-IIIusb for really comfortable operation. The PTC-IIIusb TRX interface is compatible with equipment from Icom, Yaesu, SGC, and Kenwood.

### PACTOR-III as standard

- Widespread proven technique (Winlink, SailMail etc.).
- Automatic frequency correction.
- Max. 5200 bps net.
- High adaptivity.
- High interference immunity.
- Max 2400 bandwidth.

## Farallon Cables / Accessories

Model	Description	HRO Price
<b>Miscellaneous</b>		
9001	6' power cable	\$15.95
8120	1200 baud packet cable	\$49.95
8050	9600 baud packet cable	\$49.95
<b>Control Cables</b>		
8080	Modem to Kenwood or Yaesu radio, SCS 13pin DIN to DB9 female	\$39.95
8081	Modem to Icom radio, SCS 13pin DIN to 3.5mm Mini Phone Plug	\$39.95
8083	Modem to Icom or SGC radio, SCS 13pin DIN to male DB9, 5'	\$39.95
8130	Modem to Yaesu radio, SCS 13pin DIN to 8pin Mini-DIN, 2m.	\$39.95
<b>Audio Cables</b>		
8050	Modem to Yaesu radio SCS 5 pin DIN to 6 pin mini DIN 9600 baud	\$49.95
8120	Modem to Yaesu radio, SCS 8pin DIN to Yaesu 8pin Mini-DIN, 2m	\$49.95
8123	Modem to Yaesu radio, SCS 8pin DIN to Yaesu 5pin DIN, 2m.	\$49.95
8125	Modem to Yaesu radio, SCS 5pin DIN to 1/8" stereo phone plug.	\$49.95
8127	Modem to Yaesu FT847 radio, SCS 5pin DIN to 1/8" stereo phone	\$49.95
9090	Modem to Icom radio, SCS 8pin DIN to Icom 8pin DIN, 1.5m.	\$49.95
9095	Modem to Icom radio, SCS 8pin DIN to Icom 13pin DIN, 1.5m.	\$49.95
9096	Modem to Kenwood radio, SCS 8pin DIN to Kenwood 13pin DIN,	\$49.95
9097	Modem to Kenwood radio, SCS 8pin DIN to Kenwood 13pin DIN,	\$49.95

(see complete cable reference chart at [www.farallon.us](http://www.farallon.us))

## Digital Interface



MFJ-1204



### USB to Radio Multimode Interface

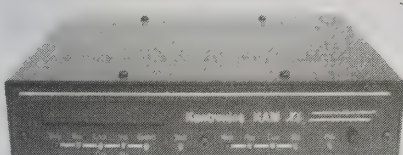
MFJ's universal USB radio interface is exceptionally easy to setup and use. However, simplicity doesn't mean compromised performance.

- Full USB connectivity.
- Powered by USB port.
- Dedicated on-board sound card.
- Quick plug-and-play connectivity.
- Works with all digital modes.
- Dozens of free downloadable programs.
- Innovative circuitry eliminates delay control.
- Transmit and receive using traditional modes such as CW, RTTY, SSTV, AMTOR, PSK31, and EchoLink, or explore newer modes like MT-63, WINMOR, WSPR, and WSJT-X. Key-in and station memory tuning.
- Perfect for base station, portable, or "go-kit."

HRO Price \$109.95

# PACKET

## Kantronics

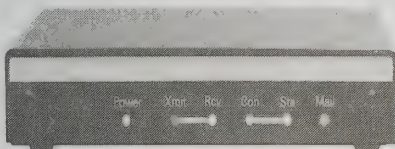


**KAM XL™**

### Multi-Mode DSP Controller

**HRO Price \$409.95**

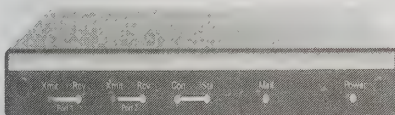
Kantronics' third generation multi-mode TNC is a state of the art design for operations on HF, VHF and UHF while supporting DSP modems and popular new modes of operation. The unit provides modes of Packet 300, 1200 or 9600 baud, G-TOR, Pactor 1, AMTOR ARQ, PSK31, RTTY, NAVTEX/AMTEX, ASCII, WEFAX and CW. It has a dual port mailbox and remote SYSOP access. It is GPS NMEA-0183 compatible and provides Kantronics Host Mode and KISS.



### KPC-3 Plus 512K USB VHF / UHF TNC

**HRO Price \$199.95**

This compact, low current TNC has become the work horse of packet radio today. It features multiple packet connects, digipeating for APRS® operations, WEFAX reception, a GPS mode for tracking, personal packet mailbox and is available with RS232 interface as well \$259.95.



### KPC-9612 XE USB Dual-Speed Dual-Port TNC

**HRO Price \$399.95**

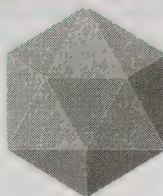
This is the rapid delivery model, supporting 9600 baud. It features both 1200 and 9600 packet ports, advanced APRS® digipeating (APRS® is a trademark of Bob Bruninga), (K-Net) networking, amateur beeper (paging), the ability to download EMWIN weather broadcasts and is available with RS232 interface as well \$459.95.

**Fax Numbers  
Pages 120-121**

# RIG CONTROL

## Radio Control Software

### Premier Ham Radio Software Suite



**HAM RADIO DELUXE SOFTWARE**  
The Radio Amateur's Best Asset

[www.HamRadioDeluxe.com](http://www.HamRadioDeluxe.com)

#### RIG CONTROL

Organize buttons, sliders, and drop-downs to toggle radio options, select modes and filter settings, and control level inputs via your computer screen.

#### LOGBOOK

A complete DX operations center, Logbook is the ideal shack accessory for everyone. Keep track of all important contact information with the click of a mouse.

#### DIGITAL MODES

DM-780 is capable of digital modes, including CW, RTTY, SSTV, PSK31, MT-63, and more. Digital Master interfaces with the popular KIEL WinKeyer.

#### SATELLITE TRACKING

Take the guesswork out of satellite operations using the latest orbital mechanics equation and up-to-the-minute Keplerian element information.

#### ROTATOR CONTROL

Integrating with Logbook and Satellite Tracking, Rotator Control manages beam headings via any computer interfaced rotator controller.

#### Support:

<https://support.Ham-Radio-Deluxe.com>

#### Forums:

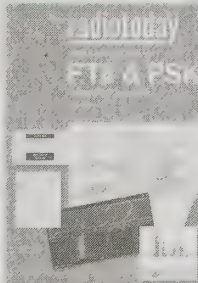
<https://forums.Ham-Radio-Deluxe.com>

**HRO Price CD version \$109.95**

**HRO Price USB flash drive version \$114.95**

## HF Digital Books

### RadioToday Guide to HF Data on FT8 & PSK



Many radio amateurs who are finding the bands quiet are now turning to HF data on FT8 and PSK and finding lots of activity

when using the weak signal modes offered by WSJT-X. There has been an explosion in the popularity of these modes and this new book offers the very latest advice on how to set up your station and operate.

This Guide explains how to set up a modern digital modes station using just a PC and a transceiver. Detailed and practical discussions explain the monitoring and operating procedures required.

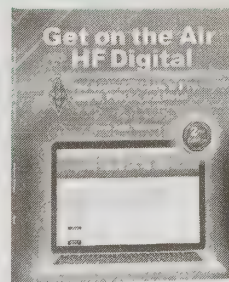
- Covers WSJT-X 2.0 software including FT8 contest modes for weak signals.
- Includes the Fldigi 4.0 freeware for the myriad of other HF digital modes available.
- Covers the new Fox and Hounds mode.
- Discusses concepts such as Forward Error Correction (FEC), Cyclic Redundancy Checks (CRC), and Fourier analysis in a simplified way using diagrams and terms familiar to most radio amateurs.

**HRO Price: \$14.95 #3001**



### Get on the Air with HF Digital

**2nd  
Edition**



Explore digital radio below 30 MHz! Here is a step-by-step guide that'll get you started.

Written in an easy to understand, conversational style, this book will show you how to set up and operate your own HF digital station. It's a fun and easy way for beginners to get on the air!

#### Let's Build an HF Digital Station

Exploring the three essential components of your station: a radio, a computer and a device that ties them together.

#### PSK31, RTTY and JT65

Hands-on instructions to get started with the three most popular HF digital operating modes today.

#### MSK and Olivia

With these two modes you'll still be chatting long after the bands have supposedly gone "dead."

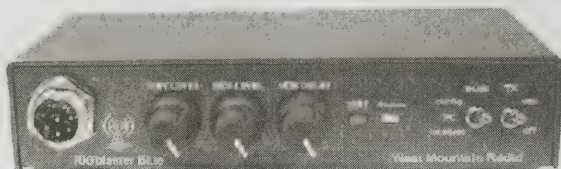
#### FACTOR

FACTOR is a great way to get your message through error free,

**Plus** articles from the pages of QST magazine!

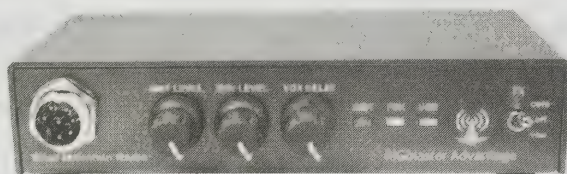
**HRO Price \$19.95 #0833**

A RIGblaster is the easiest way to connect your radio to your computer to operate PSK31, RTTY, WinMOR, Olivia, Packet and more! Chase DX easily using advanced JT65-A! Unrivaled simplicity, True FSK, True-keyed CW & CAT/CI-V Control – see why these are the World's Finest Digital Mode Interfaces! Includes DVD with more than 100 popular software programs. All RIGblasters are ground isolated and RF Filtered. Supplied with all the cables you need to get on the air. These models work with more than 2000 radio models. Kits are available for 4-pin round or RJ22 connectors.



## RIGblaster Blue

The West Mountain Radio RIGblaster Blue is a completely integrated Bluetooth wireless interface. Use a Bluetooth headset with your radio. Provides safe, secure hands-free operation. VOX PTT is available in the headset mode. Pair with any compatible laptop or tablet for mobile operation. Use with Yaesu, Kenwood, Icom, Ten-Tec and Elecraft radios. Pairing radio to any compatible smartphone or tablet provides for mobile rig control of digital modes. (Compatible software is required.) Perfect for mixed mode nets plus PSK31, RTTY, WinMOR and Packet. Operate using over 100 popular ham radio sound cards (optional). **HRO Price \$219.95**



## RIGblaster Advantage

The only RIGblaster with a built-in soundcard. It works with any radio using one USB cable to connect to PC. Built-in CAT or CI-V rig control interface. Mic input with PTT override and interrupt. Front panel transmit and receive audio and VOX delay controls. Fully isolated CW / FSK output for keyboard CW and RTTY. Includes (1) 3-ft 8-pin mic cable, (1) 6-ft 1/8" audio cable, USB cable, software programs DVD, and accessory kit. #58012-1288 **HRO Price \$204.95**

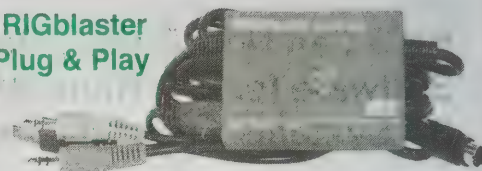
## RIGblaster Plug & Play - Radio Versions

Model Number	Description	HRO Price
58011-962	RIGblaster Plug & Play Icom 8 pin ACC1	\$124.95
58011-963	RIGblaster Plug & Play Icom 13 pin Din	\$124.95
58011-964	RIGblaster Plug & Play YIK 6 pin Mini Din	\$119.95
58011-965	RIGblaster Plug & Play Kenwood ACC 13 pin Din	\$124.95

## RIGblaster Accessory Cables

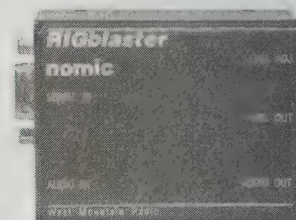
Model Number	Description	HRO Price
#58107-971	Rig Control Cable for Icom CI-V Radios	\$9.95
#58108-972	Rig Control Cable for Yaesu Mini Din-8	\$10.95
#58108-974	Rig Control Cable for Yaesu Din-8	\$10.95
#58120-984	CW Cable Kit for RIGblaster Plus II, Plus, Plug & Play 6 ft.	\$9.95

## RIGblaster Plug & Play



Simple USB Plug and Play installation. One plug to the radio and one USB connection to the computer. Built in USB to serial converter for PTT, CW and CAT or CI-V rig control. USB powered, no additional power needed. Compact: great for mobile or QRP operation. Fully isolated CW keying output for direct keying of your rig's CW. Includes: radio specific 8-ft data jack adapter cable, 12" computer audio and USB cables and software programs DVD. #58009-963 **HRO Price \$124.95**

## RIGblaster Nomic

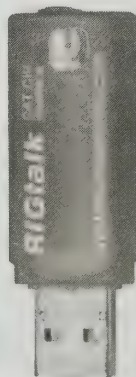


The RIGblaster Nomic is a small, simple, rugged and inexpensive sound card interface, perfect for Echolink®, portable, or field set-ups. Supplied with both a standard DB9 RS232 serial cable and USB cable interface (supported for Mac (OS9,10), Linux, Windows (98SE – Vista 32 and 64 bit)! May be used with old or new computers with your choice of USB or RS232 DB9 serial. No external power supply necessary so it is great for portable or QRP operation. Simple and inexpensive choice for a dedicated Internet link with the EchoLink® System. Includes: 3' 8-pin round circular mic cable, 3' RJ45 mic cable, USB to RS232 male adapter, 6' DB9M to DB9F serial cable, (2) 6' 1/8" audio cables, owner's manual, software programs DVD, and accessory kit. #58008-959 **HRO Price \$69.95**

## RIGtalk

### USB Rig Control Interface

Control your radio using your PC. USB to TTL level interface for CI-V control: Icom, Ten-Tec, or Elecraft. CAT control for Yaesu and CI-V radios. Pocket-sized USB dongle. Design tested with most rig control and logging software. Compatible with USB 2.0 or lower. Includes software programs DVD.



Order pre-packaged with radio cable:

**RIGtalk for ICOM CI-V**  
58202-1005 **HRO Price \$59.95**

**RIGtalk for Yaesu Mini Din-8**  
58203-1006 **HRO Price \$64.95**

**RIGtalk for Yaesu Din-6**  
58203-1007 **HRO Price \$64.95**

## Radio Set Up the Easy Way!

Set Up All the Features... Not Just the Memories  
with RT Systems Programming Software and Cables

**rt SYSTEMS**  
RADIO PROGRAMMING MADE EASY

**HRO Can Now Supply Radio Programming Software for any Radio Model that RT Systems Supports, Including Radios From:**

Alinco • Abbree • Anysecu • AnyTone  
Baofeng • Baojie • BTEch

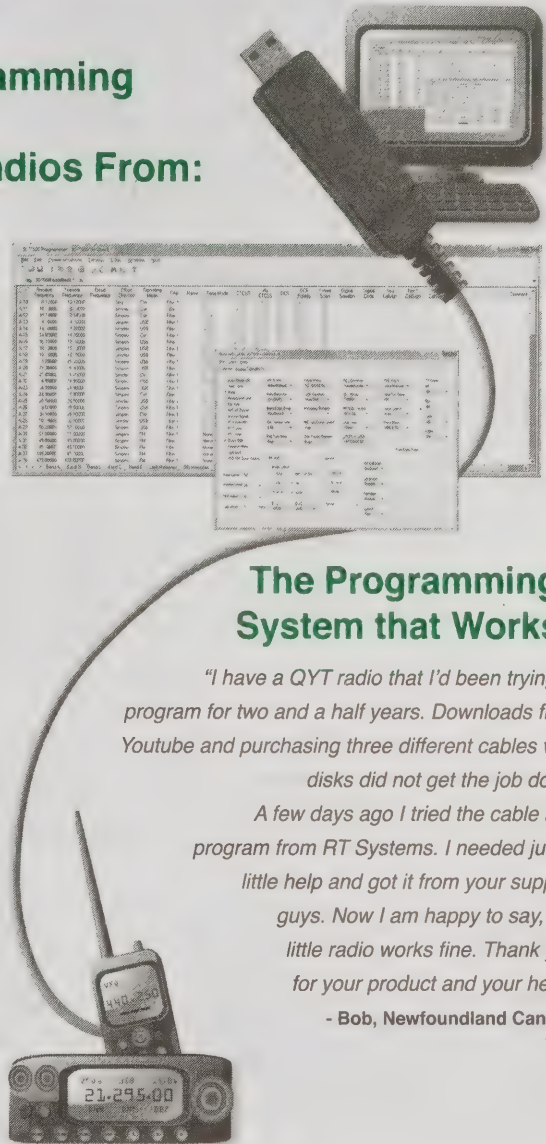
Dusty Motorsports • Hesenate  
HYS • Icom • JetStream  
Jintom • Jingtong • Juentai

Kenwood • Leixen • Luiton  
Midland • Pofung  
Powerwerx • Puxing

Quansheng • QYT • Radioddity  
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SainSonic • Socotran  
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## The Programming System that Works!

"I have a QYT radio that I'd been trying to program for two and a half years. Downloads from Youtube and purchasing three different cables with disks did not get the job done.

A few days ago I tried the cable and program from RT Systems. I needed just a little help and got it from your support guys. Now I am happy to say, the little radio works fine. Thank you for your product and your help."

- Bob, Newfoundland Canada

For More Information: [www.rtsystems.com](http://www.rtsystems.com)  
800-921-4834 | Tech Support: 404-806-9561

**447**

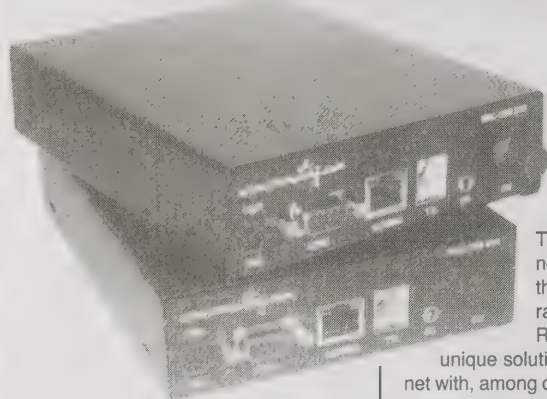
~~425~~ unique radio Programmers . . . Check for your radio model at:

**[www.rtsystems.com](http://www.rtsystems.com)**

# RADIO REMOTE CONTROL

## REMOTERIG

*The Ultimate in Remote Control*



**Remoterig  
RRC-1258-MkII-S-Set**  
\$489.95 – HRO Price for the Set

The Remoterig RRC-1258-MkII-S-Set was developed to control Amateur Radio stations remotely via the Internet in a user friendly and cost-effective manner.

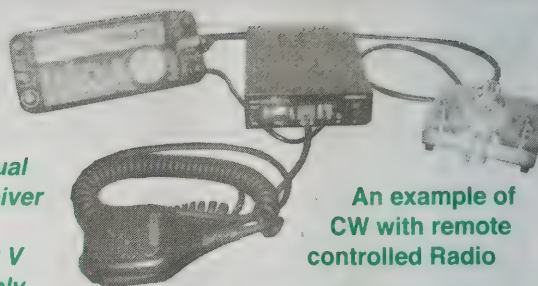
Remoterig units are used in pairs; one unit is connected to the radio, and the other to the control equipment. The system is unique in that no PC is needed; both voice and data communications are handled by the two units.

The RRC-1258-MkII-S-Set can be configured to work with almost all ham equipment currently available from Icom, Kenwood, Yaesu, and Elecraft. Remoterigs are especially useful in situations where you are (1) not allowed to install antennas at your home location, (2) the noise level is so high that a normal signal exchange is not discernible, (3) you want to build an antenna system too large for your local urban area, or (4) you do not want to be dependent upon a PC for the remote control.

The ultimate functionality of the Remoterig RRC-1258-MkII-S-Set can be experienced when the system is used with radios having detachable front panels such as the Kenwood TS-480, TS-2000, or Icom IC-706 series. Simply replace the cable between the control panel and the radio with the Remoterig system. The Yaesu Twin version and Electric K3 Twin versions are available.

The system also works very well with more traditional remote control situations from PC-based control software, like Ham Radio Deluxe; the Remoterig boxes solve the voice and data problems, but you do need a PC for the control software itself in this particular setup.

**Now with Dual  
(Stereo) Receiver  
and  
Includes 12 V  
Power Supply**



**An example of  
CW with remote  
controlled Radio  
CW Keyer**

The Remoterig system itself will not introduce any latencies, and those introduced by the Internet will rarely be a noticeable problem. The Remoterig system also includes a unique solution for operating CW over the Internet with, among other things, a built-in CW keyer that uses a standard 3.5 mm stereo plug.

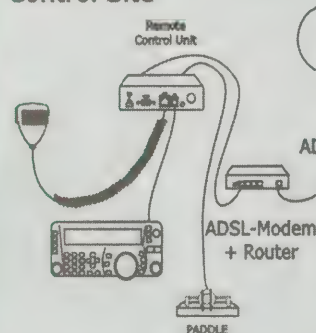
The Remoterig RRC-1258-MkII-S-Set is connected to the Internet primarily via 10 or 100 Mbit Ethernet cable, and fixed connections like DSL, cable, or WLAN. 3G based mobile solutions will also work, although occasionally with reduced performance. The system is portable and can be used from almost any network connection in the world. Session initiation, audio (VoIP), and data are transferred using standardized protocols like SIP, RTP, etc., where you can select different audio qualities depending on available bandwidth. The Remoterig system is easily configured via modern USB and WEB based user interfaces. Stereo (dual receiver) works only with radios with dual receivers.

A CW keyer has been implemented in the RRC-1285S-MkII-S-Set software to make CW operation possible, even with longer Internet latencies and jitter. During normal operation we depend on the radio's sidetone for CW, so the problem of Internet latency is solved by the sidetone being generated locally in the Remoterig box. Remoterig automatically mutes the sidetone generated by the radio for x number of ms after the dot or dash is sent; the delay can be adjusted depending on the latency.

The CW-handler is a kind of adjustable "jitterbuffer" for the CW keyer at the radio end. If the latency of your Internet connection is not constant, the delay (in ms) can be set before the radio is keyed. The CW keyer reconstructs the transmission on the fly before it is sent; a system that is much more tolerant of varying latencies (jitter). Lengthier delay settings may provide higher tolerance against jitter, but will also effectively delay the transmitted CW signal.

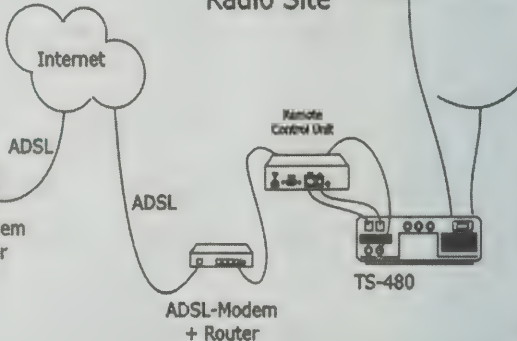
### Example: Remote control of Kenwood TS-480

#### Control Site



As an example, the diagram shows a TS-480 in use with the RRC-1258-MkII-S-Set. Any of the available radios with detachable front panels, like the IC-706, and TS-2000, will be configured in the same manner. The cable between the front panel and the radio is replaced with two RRC-1258-MkII-S-Set; one connected to

#### Radio Site



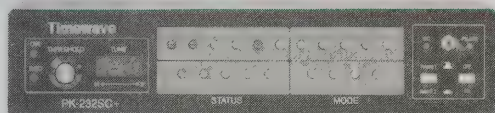
the control panel, and one connected to the radio itself. No PC is necessary in this case.

When the power button is pressed, the radio on the remote side will start up, and all audio and information from the panel travels via the Internet between the pair of RRC-1258-MkII-S-Set units – a very

similar situation to SIP-based IP telephones. All appearances and functions will be as if the front panel and radio were directly connected. Presently, the TS-480 is the simplest to adapt using one additional cable (optional Kenwood E30-3500-05). Connection cables can also be made using the RJ-45 and RJ-11 connections.

## Timewave Technology

### Multimode Data Controller



**PK232SC**  
**Multimode Data Controller**  
HRO Price \$599.95

With the addition to the PX-232 of a built-in sound card, rig control, computer isolation, and total USB connectivity, the PK-232SC brings a new level of performance with sharp, accurate DSP filters for all its internal data modes and dual transformer isolation for sound card data modes. Weak signals magically appear from the noise and QRM bounces off the new DSP filters for cleaner copy with fewer errors than the old analog filters.

#### More Filters, Better Filters, Automatic Selection

The PK-232SC brickwall filters have tighter bandwidth and steeper skirts for improved noise and QRM rejection. New firmware (version 7.2) allows a wider selection of filters than the original PK-232, so the filter can match the mode. The correct DSP filter is automatically selected when you choose an internal mode. In RTTY, Timewave's proven twin peak filters pluck the mark and space tones from the noise and QRM for great copy. In PACTOR, the filter bandwidth automatically changes when the baud rate shifts in response to the error rate of the link. In Morse (CW), the operator can preset either 100 Hz or 200 Hz bandwidth. The PK-232SC is compatible with all Windows XP, Vista, and Windows 7 software terminal programs for the PK-232.

#### Sound Card Interface and Rig Control

For maximum flexibility, Sound Card / TNC switching is both software and panel switch controlled; sound card mode selection is software controlled. For example, when operating with Radio Operating Center software, changing to PSK31 from Pactor or MT63 is a simple menu click. The single USB cable from your PC also moves your logic level Kenwood RX / TX / RTS / CTS, Yaesu CAT, and Icom CIV and USB rig control interface to the back panel of your PK-232SC.

#### All the Proven Modes + All Sound Card Modes

PK-232SC supports all new sound card modes in addition to all of the existing PK-232 modes: Pactor, VHF/ HF packet, AMTOR/SITOR, Baudot, ASCII, Morse, HF Weather FAX, TDM, and NAVTEX.

The PK-232 / PSK comes with a complete cable and connector set in addition to Timewave's on-line and telephone support. As always, you can upgrade any PK-232 ever built to the latest PK-232SC!

- Digital signal processor.
- 18 DSP filters.
- Twin peak RTTY filters; adaptive PACTOR filters.
- Works with all sound card modes.
- USB sound card audio.
- Rig control for Icom, Yaesu, and Kenwood transceivers.
- Single USB computer connection.
- Galvanic computer isolation.

### Radio Control

#### Ham-LinkUSB™

**USB  
Rig  
Controller  
Plus**  
HRO Price  
\$59.95

*Connect and  
control your  
transceiver via  
USB with Plus  
option for T-R  
switch, key, foot-  
switch input, or  
user I/O.*



The HamLinkUSB™ Rig Controller Plus is a USB to logic level conversion device for CAT / CI-V enabled transceivers that provides PTT output, keying output, or foot switch input options.

The CAT / CI-V feature provides a logic level serial interface which connects directly with non-RS-232 CAT / CI-V inputs on Kenwood, Icom, Yaesu, Ten-Tec, Elecraft and Alinco models. The controller is compatible with most soundcard and software control programs such as PK-Term 3.0.

#### HamLinkUSB

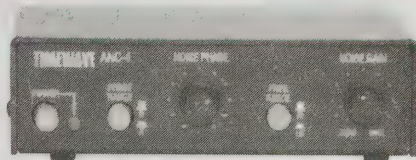
##### Optional Cable Assemblies

**HLUSB-CIV** CI-V - Icom,  
Ten-Tec, Elecraft.  
HRO Price \$8.95

**HLUSB-CAT** MiniDIN-8 cable  
assembly for Yaesu FT-857 /  
817/ 100 / 100D  
HRO Price \$13.95

**HLUSB-4CON** 4 conductor  
with 3.5 mm plug to open  
end cable.  
HRO Price \$13.95

### Noise Canceler



**ANC-4**

The ANC-4 RF device eliminates or reduces power line noise, computer noise, TV generated interference, and other types of electrical noise. Attach the unit directly to the antenna connector of the receiver or transceiver to cancel locally generated noise before it affects the receiver AGC circuits. Reception of signals well below the noise level of the local interference is possible.

To cancel locally generated interference, the ANC-4 detects the interfering signal and adjusts its phase and magnitude so that it matches the offending interference at the receiver input, but is 180 degrees out of phase. Front panel controls allow adjustment of both phase and magnitude.

Connect the ANC-4 between the main station antenna and the receiver antenna connector. A second antenna connects to the ANC-4 to pick up noise. A short wire antenna or short collapsible whip is generally satisfactory for eliminating noises generated around the operating position or in the house, but an external antenna works better to eliminate noises generated outside the home. Any noise antenna that works, including combinations of horizontal and vertically polarized antennas, is satisfactory.

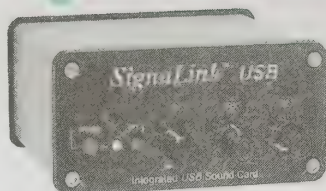
The ANC-4 operates as an active antenna by using the noise antenna and the NOISE GAIN control to amplify the antenna output. The unit can also be used as a diversity combiner to peak weak signals or null interfering signals. **HRO Price 189.95**

### Sound Card Modem



**Navigator**

The Navigator USB sound card modem has a proven USB audio sound chip, six FTDI USB serial COM ports, a K1EL WinKey keyer, true FSK and rig control connections for every radio. A built-in USB sound card with isolated audio I/O to your radio prevents ground loops. A second audio input lets you use both receivers in a dual receiver radio. The logic level and RS-232 rig control ports support your Icom CI-V, Yaesu CAT, Kenwood and other radios. Front panel controls set both RX audio levels, TX audio output level, audio monitor level, and the CW speed. **HRO Price \$374.95**



## SignalLink™ USB

### Integrated USB Sound Card

SignalLink™ USB combines the legendary performance of our SL-1+ with a state of the art "built-in" low-noise USB sound card. The unit delivers optimum performance while eliminating the need to attach to your computer's existing sound card. Convenient front panel controls and simplified installation make this one of the most user-friendly interfaces on the market.

ALL sound card digital and voice modes are supported by the SignalLink™ USB including traditional modes such as RTTY, SSTV, CW, PSK31, MT-63 and EchoLink®. Performance on all modes has been optimized by the use of special low-noise parts and careful design techniques. Front panel controls let you adjust your transmit audio, receive audio and transmit delay "on the fly."

The SignalLink™ USB works with ALL radios and can be attached to the mic jack, data port or accessory port (see table below.) A wide selection of fully assembled radio cables is available for common base and mobile radios. A special unterminated radio cable is available for handhelds and radios that use a non-standard connector.

The SignalLink™ USB comes fully assembled and tested. No external power required; power is from the USB port. The unit comes with a USB cable. Specify which cable is to be included by using the table below. Also included: mono cable, jumper wires, allen wrench, software CD, documentation. Supports Windows, Mac OS9.1 or later and Linux. FCC certified to comply as a Class B digital device. Unit prices including the radio cable are shown in the table below. **HRO Price \$114.95 each**

### Microphone Connectors

SLUSB4R	For 4-pin round mic connector
SLUSB8R	For 8-pin round mic connector
SLUSBRJ11	For RJ-11 mic connector
SLUSBRJ45	For RJ-45 mic connector
SLUSBKX3	For Elecraft KX3

### Accessory Port Connectors

SLUSB5PD	For 5-pin DIN data / accessory port
SLUSB8PD	For 8-pin DIN data / accessory port
SLUSB6PM	For 6-pin mini DIN data / acc. port
SLUSBK3	For Elecraft K3
SLUSB13I	For Icom 13-pin DIN accessory port
SLUSB13K	For Kenwood 13-pin DIN acc. port



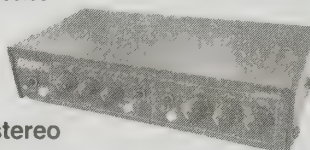
West Mountain Radio audio products contain ClearSpeech® noise reduction/digital signal processing that provides extremely effective noise reduction for voice and CW. Reduces or eliminates atmospheric noise, hum, hiss, heterodynes & static. Greatly improves the signal-to-noise ratio and thus the readability of all QSOs.



## Noise Reduction Processor

### CLRdsp ClearSpeech® DSP

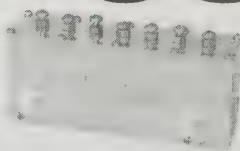
Speaker and headphone amplifier with ClearSpeech® adaptive DSP noise reduction for voice and CW. Recognizes intermittent nature of CW and allows it to pass noise free. Continuously adjustable noise reduction. Contains 11 watt (into 4 ohms) power amplifier. Sturdy aluminum case. Ideal for mobile operation as well as home station. Plugs into the speaker or headphone output on the radio. Powerpoles® plug into any 12V supply. #58407-949 **HRO Price \$199.95**



## CLRstereo

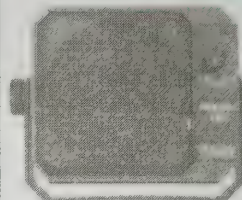
Independent DSP noise reduction for main and sub RX or two separate radios. Features flexible audio switching; independent volume, tone, and filtering for both channels; PTT input for fast audio recovery; dual power option (USB or 12v DC). #58412-1762 **HRO Price \$349.95**

## VHF & UHF Bandpass Filters



Get rid of unwanted noise and give your 2 m and/or 440 MHz receiver the best front end sensitivity. Reduce the squawks and squeals of intermod and protect from lightning. Good passband loss and out-of-band attenuation with excellent SWR. These filters are made to be transmitted through (tested to 160 Watts) and are available with UHF or Type "N" connectors. **HRO Prices: VHF \$159.95; UHF \$219.95.**

## High Power 15 Watt Speaker

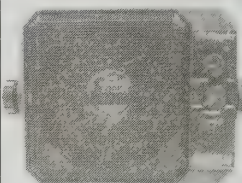


## PWRspkr 15W

RMS linear power amplifier minimizes distortion at high sound levels.

Sharp bandpass filter with 300 Hz to 3.2 kHz pass band attenuates unneeded bass and treble sounds. Adjustable gain control. Plugs into radio's speaker or headphone jack. Ideal for use in truck or car for improved communication in noisy environment. Power cable fitted with Powerpole® connector. #58406-947 **HRO Price \$75.95**

## Noise Reduction Speaker CLRspkr ClearSpeech® DSP

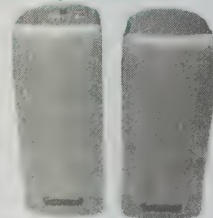


Amplified loudspeaker with ClearSpeech® adaptive DSP noise reduction for voice and CW.

Recognizes intermittent nature of CW and allows it to pass noise free. Continuously variable adaptive filter noise reduction. Contains 4-in. loudspeaker with 7.5 Watts RMS maximum amplifier. Volume control knob for adjustment of internal speaker sound level. Front mounted 1/8 - inch stereo output jack for powered speakers or 16 ohm (or higher) headphones. #58407-948 **HRO Price \$199.95**

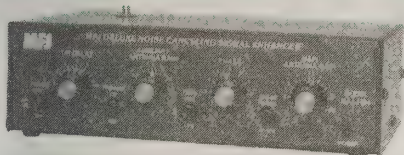
## RF Immune Computer Speakers

### COMspkr



Eliminate HAM radio station interference. Replaces RF interference prone computer speakers. Amplified speaker system optimized for operation in close range of any radio transmitter. Exceptionally high rejection of radio frequency interference from 1 to 1000 MHz. Stereo high fidelity response for use with voice or music. High 3-Watts per channel acoustic power output can be heard clearly in noisy environments. Built-in amplifier assures compatibility with most computers and/or two way radios. Powered via USB. #58409-950 **HRO Price \$39.95 per pair**

## Noise Canceller



## Signal Enhancer

### MFJ-1026

An adjustable antenna network that combines two antenna signals to give various directional patterns. Null out strong interfering signals or peak weak signals at the push of a button. Use external or built in active noise antenna. Works on all modes from BC to low VHF. Eliminate severe line noise from many sources before it ever gets into your receiver. Can run off 12 VDC or 110 VAC using MFJ-1312D.



### MFJ-1025

Similar to the MFJ-1026 without the active antenna.

## Noise Filter



## AC Line Filter

### MFJ-1164

Filters AC line RFI, surges, noise, transients, hash 30 dB. Four 15 A / 120 VAC outlets.

## SSB Speech Refined

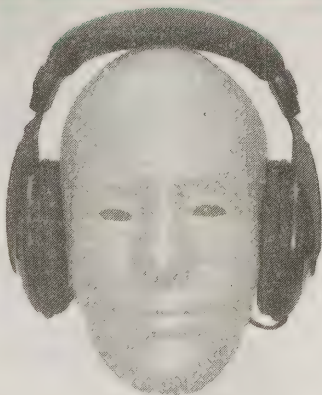


### MFJ-616

Speech Intelligibility enhancer extraordinaire. An amazing difference in understandability of SSB speech. No hissing, ringing, or other strange effects, making a dramatic improvement.

**MFJ-618** has separate adjustable channels for each ear.

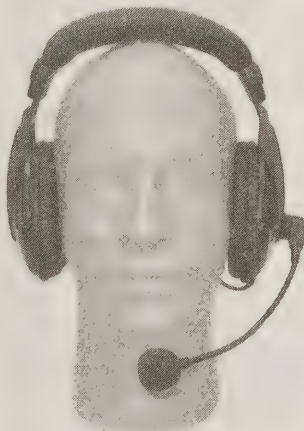
## Speakers / Headphones



## Headphones

### MFJ-392B

MFJ's communication headphones are perfect for amateur radio and shortwave listening. All modes, each earphone with separate volume control. Super padding. 9' cord. Padded headband and comfort cushion ear pads. Mono / stereo adaptor included.



### MFJ-393 (K,I,Y)

Professional boom mic / headphones for contesting, DXing, traffic nets. Comfortable padding seals out noise. Frequency tailored mic. Adjustable boom.

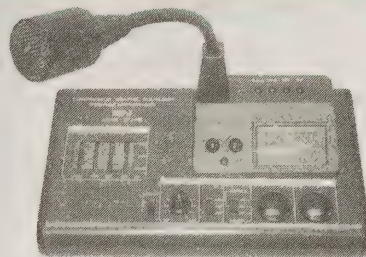


## Speaker

### MFJ-281

MFJ ClearTone™ restores the broadcast quality sound of shortwave listening. Makes copying easier, enhances speech, improves intelligibility, reduces noise, static, hum. 3-inch speaker handles 8 Watts. 8 ohm impedance. 6 foot cord.

## Microphones



### MFJ-299

Desk microphone, tailored for SSB. Adjustable 11 inch boom. Graphic equalizer, compressor, VU meter, on-air indicator, PTT / lock switch.



### MFJ-297

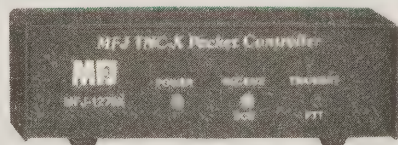
A basic SSB boom mic with PTT switch.



### MFJ-1263

Microphone control center allows instant switching of microphones to different transceivers. Use PTT footswitch, headset-boom mic, phones, speaker, audio-in jack.

## KISS Mode TNC



### MFJ-1270X

A universal self-contained KISS mode TNC that works with every packet software program that supports KISS mode. Perfect for APRS. Fully compatible with WinLink 2000. Works with Windows, MAC OS X and Linux. Active audio filter cleans up analog signals. Small, inexpensive, low power consumption, expandable.



## HM-10XD

The HM-10 XD features our new HC-5X and HC-4X elements. The narrow response of the HC-4X is ideal for DX work and the full response of the HC-5X is great for everyday rag chew. It comes equipped with a microphone clip and a foam windscreen. CC-1 adapter required. **HRO Price \$CALL**



## HM-12 Designed for Hams

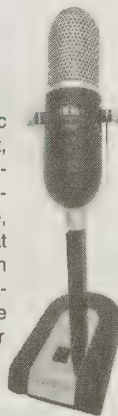
The high output full range "Genesis" dynamic element in the HM-12 is designed to work with just about every amateur radio low impedance transmitter. The element is mounted in a unique internal shock mount and exhibits nearly -35 dB of rear rejection, reducing background and ambient noise from the transmitted signal. The "soft touch" PTT switch is wired to pins 3 and 4 for transmitter control with the microphone signal fed to pins 1 and 2 of the 4 pin XLR. The Heil HM-12 uses Heil CC-1 connecting cables. This

microphone has a unique internal windscreen plus an external foam windscreen. It has the 5/8" X 27 microphone clip designed for our booms and stands. Frequency response: 80 Hz-14 kHz @ -55 dB. Satin black finish. **HRO Price \$CALL**

## PR-77D PR-77DP

Available in Black or Purple

Use this professional quality dynamic microphone for commercial broadcast, recording, podcasts and any application that requires a smooth flat response over a wide frequency range, excellent transient response, great speech articulation and low IMD. With rear rejection of over -40 dB, it also features a two position switch allowing the selection of the best characteristics for voice or music. **HRO Price \$CALL**



## PR-781 / PR-781G

These professional quality dynamic cardioid microphones for amateur radio provide a wide frequency response, great articulation, and a -40 dB of rear rejection with ample output to drive most amateur radio microphone inputs. The PR-781G is specifically designed for use with most makes of Elite transceivers by Kenwood, Flex, Elecraft, Yaesu, Ten Tec and Icom. The PR-781G is the same great design and performance as the PR-781 but now with a beautiful gold screen. Both models come with the SM-3 mount. **PR-781 HRO Price \$CALL; PR-781G HRO Price \$CALL**



## The Fin™

The Fin™ utilizes the PR-20 element so popular in the professional audio realm. It is housed in a gorgeous high-gloss chrome finish. If phantom power (not compatible with Icom transceivers) is provided to The Fin™, the blue wind screen (also available in red or white) becomes illuminated by 4 embedded LEDs. Now also available in satin black with red, white or blue LEDs/foam. CC-1 XLR required. **HRO Price \$CALL**



## Handi-Mics

### HM-IC

The Handi Mic is an ultra-compact hand microphone utilizing a special internal shock mount, yielding superior audio compared to the standard microphones offered by the radio manufacturers. The Handi Mic is available with the "IC" element designed for Icom rigs. A special "Pro" version is also available, with a wide-range dynamic element that sounds great on FM

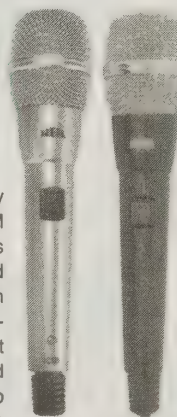
mobile rigs. **HRO Price \$CALL**

Model	Element	PTT
HM-IC	Electret for most Icom	Yes
HM-PRO	Wide range dynamic	Yes

## iCM / ICM BG Salvation for Icom Users!

Also available  
in Black and Gold

The iCM is a high-quality microphone for early iCOM transceivers that comes in an all platinum colored finish or a matte black with gold grill. It features a high-gain condenser element that provides full-bodied audio with plenty of drive to match up with the low-gain audio systems of the earlier iCOM rigs. It also works well with the higher-gain "Pro" radios and IC-7800. It comes with an attached, shielded 8' cable terminating in an 8-pin mic plug and a 1/4" PTT pigtail. **HRO Price \$CALL**



## Pro Connector Cables

This 8 ft long cable connects The Fin and PR Series microphones to your 8-pin Kenwood, Yaesu, or iCOM transceiver. Made with Heil-wire to help reduce RFI and noise. Pig tail easily connects to HS-2, FS-2 or FS-3.

CC-1 XLR BAL	FT-950, FTdx9000	\$39
CC-1 XLR I	Icom cable	\$39
CC-1XLR K	Kenwood cable	\$39

## The Heritage HHG

The Heritage is a dynamic microphone with a vintage chrome look. It utilizes the PR 20 element and has a lockable on/off switch. It is available in chrome or black matte with blue foam windscreen. **HRO Price \$CALL**



## Heil PR30

The PR 30 was designed for commercial broadcast, live sound and recording. It has comparable sound to the finest condenser microphones because of its wide frequency response, excellent transient response and low IMD. The PR 30 comes standard with the SM-3 5/8" X27 mount. All the PR series microphones require a CC-1 XLR cable to interface with your transceiver. Available in black or champagne. **HRO Price \$CALL**



## Heil PR40

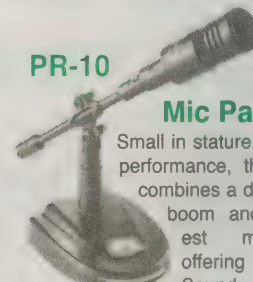
The PR 40 was designed for commercial broadcast, live sound and recording. It features the Heil dynamic element with a perfectly flat response from 28 Hz all the way up to 18 kHz and has gorgeous articulation. The PR 40 is shipped with the SM-3 5/8" X27 mount and a padded leatherette carrying case and is available in champagne, chrome, gold, and matte black with gold grill finish. All the PR series microphones require a CC-1 XLR cable to interface with your transceiver. **HRO Price \$CALL**



## PR-10

### Mic Package

Small in stature, mighty in performance, the PR 10 combines a desk stand, boom and the latest microphone offering from Heil Sound. The integrated mic exhibits outstanding speech articulation with perfect balance of highs and lows. Works well on most all transceivers. Requires a CC-1 XLR series cable to interface with your transceiver. Also available as the PR-10 Red with the LB-1R. **HRO Price \$CALL**





# MICROPHONE ACCESSORIES

## Mounts

### SM-1

#### Shock Mount

microphone not included

The ultimate suspension mount for your Heil hand microphones. This shock mount can be used on all Heil stands or booms with 5/8" x 27 standard threads. **HRO Price \$79.00**

### PRSM Shock Mount

This flexible support system helps suppress low-frequency rumble by dampening vibrations. The PRSM fits large-diameter microphones including the PR 30/40/781 and can be used on all booms or stands with 5/8 threading. **PRSM-B black finish. HRO Price \$CALL**  
**PRSM-C champagne finish. HRO Price \$CALL**

## Switches

### HS-2

#### PTT Hand Switch

Heil's high quality hand switch made for P.T.T. operation is shaped to fit your hand naturally and comfortably. Comes with a 6 foot cable that plugs into the AD-1 or CC-1 adapter. **HRO Price \$35**

### FS-3

#### Single Circuit Footswitch

Use the FS-3 to control the transmit function of your amateur radio. A 6-foot shielded cable is terminated with a commercial 1/4" plug that connects into the Heil CC-1 and AD-1 cable system. **HRO Price \$27**

### FS-2 Dual Footswitch

This unique dual-action footswitch provides two sequenced micro-switches, one each for connection to your transmitter and your linear amplifier; when you press down on the footswitch, the amplifier's switch is engaged first, followed immediately by the switch for the radio, and when you let up the reverse sequencing takes place. This provides safe T/R switching for both radio and amplifier without need for a control cable between the two units. **HRO Price \$49.00**

### Illuminated Bases

### LB-1R

Red finish with white light

### LB-1B

Black finish with blue light

Heil Sound's fun light up bases have an oversized PTT with the Heil logo and LED lights that can be illuminated in 2 different ways. It has standard 5/8"-27 brass threading to work with any Heil Sound microphone accessories. This weighted base features a high strength plastic covering and great looks. **HRO Price \$CALL**

### CB-1 PTT

#### Classic Base

This beautiful reproduction of a 1930 RCA microphone base has stainless trim and features a PTT with a 4" riser that accepts 5/8" x 27 hardware. **HRO Price \$79.00**

### FL-2

#### Fiange Mount

With brass insert. Fits the PL-2T, SB-2, HB-1. **HRO Price \$29**

### DT-1

#### Desktop Flush Mount

Allows PL-2T, SB-2 and HB-1 to slip into 1-1/2" hole drilled into desktop. **HRO Price \$39.00**

### WM-1

#### Vertical Surface Mount

The WM-1 is a unique mount for the Heil booms that allows them to be mounted on a vertical surface. The brass insert of the WM-1 ensures smooth, perfect fit with PL-2T and HB-1. **HRO Price \$25**

## Booms

### PL-2T

#### Studio Boom

The PL-2T "Topless" boom is a unique articulated boom that lets you tuck your microphone cable away for a professional appearance. It accepts all Heil Sound 5/8" x 27 threading microphone mounting clips. Includes a C-Clamp. It can support a total weight of 2.5 lbs. **HRO Price \$109.00**

### SB-2

#### Small Boom

This compact, adjustable boom accepts standard 5/8 x 27 threading and comes with a C-Clamp. It is compatible with all Heil Sound hardware. **HRO Price \$59.00**

### HB-1

#### Economy Microphone Boom

The HB-1 is an articulated boom balanced by four external springs. It is capable of supporting microphones weighing up to 2.5 lbs. and any standard 5/8 x 27 threaded microphone hardware. The HB-1 is shipped with a C-Clamp mount that accepts up to a 1.5" thick cable and is compatible with all Heil Sound hardware. **HRO Price \$71.00**

### RS-1

#### Riser

This 12" riser allows you to mount any Heil Sound boom behind your transceiver or console. **HRO Price \$30**

## Wireless Adaptor

### HBA

#### Wireless Connector

We bring to you a pair of simple wireless devices one connecting into any of our 3 pin balanced XLR microphones (PR 20, PR 22, PR 781, etc) and the receiver connected to the microphone input of any Heil AD-1 headphone adapter. It has a range of about 40'. The stations you work can not tell that you are using a wireless adaptor instead of a wired mic cable. A PTT is required. **HRO Price \$CALL**



### Pro-7 Stereo

The Pro 7 features an audio balance control allowing the user to adjust levels between speakers. It also features the Heil Sound Phase Reversal Switch, which allows the user to "move" the incoming signal to significantly improve copy in a tough DX pile up. The mic boom can be rotated for use on either the right or left ear. The Pro 7 is available in black, red, and blue. It can be outfitted with the HC-7 dynamic element or the iC electret element, the HC 74 Element for DX is available separately. Compatible with current AD-1 series adapter cables. **HRO Price \$CALL**



### Pro Set 3 Stereo Headphones

Pro Set 3 stereo headphones are professional and lightweight designed for music recordings, internet, commercial radio, and ham radio. They ship with 3 detachable cables: a 1.8 M flexible straight cable, a 1.8 M straight cable with 3.5mm plug, and a 3 M coiled cable. All cables feature a twist lock terminating in a 1/8" (3.5mm) professional gold plated screw-on 1/4" (6.3mm) adapter. The Pro Set 3 features the Heil Sound Phase Reversal Switch, which allows the user to "move" the incoming signal to significantly improve copy in a tough DX pile up. **HRO Price \$CALL**

### Pro Set Elite



The redesigned Pro Set Elite features improved comfort and durability. It offers dual side, highly efficient speakers mounted in acoustically tuned chambers which offer high rejection of outside noise. The headset folds for easy transport and storage. It comes in two models. The Pro Set Elite-6 contains the Heil HC-6 full-range dynamic microphone element and the Pro Set Elite-iC contains the Heil iC electret microphone element specifically designed for iCOM. **HRO Price \$CALL**

### Pro Sets



Pro Sets are lightweight, versatile boomsets with the Heil Sound Phase Reversal Switch, allowing the user to "move" the incoming signal to significantly improve copy in tough DX pile ups.

**Pro Set Media Pro** for computer has a high-level condenser element and two 1/8" plugs for applications requiring connection of a headset / boom mic to a computer's sound card.

**Pro Set 6** for commercial broadcast applications utilizes the HC-6 dynamic element. Requires AD-1 adapter.

**Pro Set iC** with electret condenser designed for low mic inputs used on many iCOM transceivers. The iC requires 5 volts of DC phantom power (provided by all Icom rigs) and includes AD-1 iC adapter.

#### Pro Set Accessories:

**BAG -1** Leatherette travel bag for all Heil Sound headsets. **HRO Price \$29**

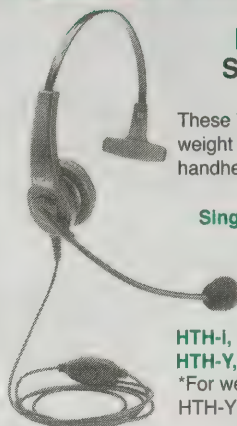
# HEADSETS

## Lightweight Headsets

### Handie Talkie Headset Single-sided or Dual-sided

These HTH single-sided and HTHD dual sided lightweight headsets are designed for use with popular handheld transceivers featuring an in-line PTT.

#### Single (HTH)- or Dual-sided (HTHD) Models HRO Price \$CALL



**HTH-K, HTHD-K** Works with 2-pin Kenwood, Baofeng, and Wouxun.

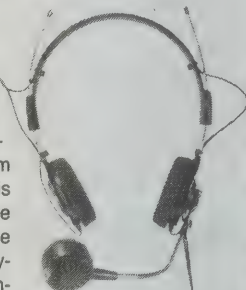
**HTH-I, HTHD-I** Works with 2-pin Icom.

**HTH-Y, HTHD-Y\*** Works with TRRS Yaesu / Vertex.

\*For weather resistant Yaesu / Vertex, use the HTH-Y and HTH-ADY adapter.

### BM-10

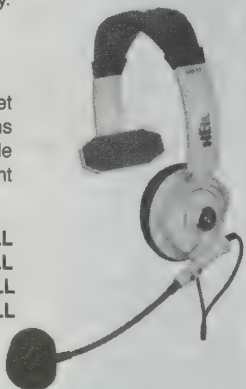
The BM-10 headset is a lightweight (only 3 oz), articulate boomset that is ideal for DXpeditions, mobile, and general rag chewing. The speakers are extremely sensitive and don't require much AF drive from the transceiver. The frequency response is 60 Hz - 12 kHz with very low distortion. The ear pads are replaceable acoustic foam. The BM-10 comes in two versions, a BM-10-Dynamic and a BM-10-iC (electret), to accommodate many radios on the market today. AD-1 cable required. **HRO Price \$Call**



### BM-17

The BM-17 is a new, lightweight headset designed for emergency communications available as either a single-side or dual-side model, with either a BM-17-Dynamic element or a BM-17-iC Electret element.

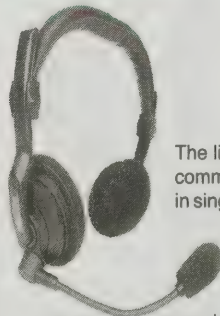
**BM-17 Dynamic Dual** HRO Price \$CALL  
**BM-17 Dynamic Single** HRO Price \$CALL  
**BM-17 ICOM Dual** HRO Price \$CALL  
**BM-17 ICOM Single** HRO Price \$CALL



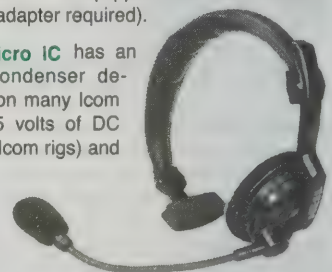
### Pro Micro PMD-6 Dual-sided

The lightweight Pro Micro headsets are designed for commercial broadcast applications. They are available in single sided or dual sided models. **HRO Price \$Call**

**Pro Micro 6** is equipped with HC-6 element (AD-1 adapter required).



**Pro Micro iC** has an electret condenser designed for low mic inputs used on many Icom transceivers. The iC requires 5 volts of DC phantom power (provided by all Icom rigs) and includes an AD-1 iC adapter.

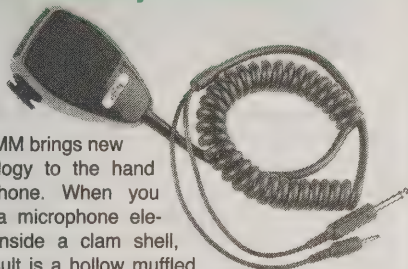


### Pro Micro PMS-6 Single-sided



## Handheld Microphone

### HMM-Dyn / HMM-iC



The HMM brings new technology to the hand microphone. When you place a microphone element inside a clam shell, the result is a hollow muffled sound. To solve this problem, we installed a grill on the top of the microphone that detunes the internal resonance of the housing. We came up with a very special, full-range microphone element with great speech articulation. A very flexible but sturdy coil cable terminates with 1/8" male for the microphone and a 1/4" male for the PTT control. **HMM-Dyn (Dynamic) - HRO Price \$CALL**

Also offered with the iC electret element as **HMM-iC**. AD-1 cable required. **HMM-iC - HRO Price \$CALL**

## Audio Processor



### Parametric Receive Audio System PRAS EQ

The Heil Parametric Receive Audio System Equalizer (PRAS EQ) is a state-of-the-art audio processor that enhances the internal audio systems of amateur radio, shortwave, commercial, and CB receivers. The PRAS EQ allows radio operators to modify, shape, and improve the audio output of their receivers using three separate equalization controls.

### Powered Speaker (HPS-5)

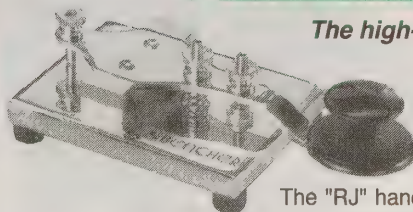
The Heil Powered Speaker (HPS-5) is a two-way, powered speaker designed to be used with the PRAS. Together they provide unmatched speech articulation and bring new dimensions to receive audio quality. The HPS-5 powered speaker features a 5" driver and a 24-Watt amplifier. The PRAS and HPS-5 come with an XLR to XLR cable, 12-volt Y-Power Supply, 1/8" to 1/8" stereo source cable, and 1/4" to 1/8" stereo adapter.

**HRO Prices: PRAS-EQ \$249 HPS-5 \$199**



# KEYS & PADDLES

## VIBROPLEX®



*The high-quality **Benchner** product line is now part of the oldest name in Ham Radio, Vibroplex.*

### RJ Series Hand Keys

The "RJ" hand keys have an advanced American-style design derived from the telegraph keys that won the west, yet with modern features like Oilite bearings, a solid navy knob, gold-plated solid silver contacts, full locking adjustments of all tension and spacing parameters, and Benchner quality materials throughout. These keys are ideal for the new amateur just mastering code as well as the old time brass pounder anxious to "clear the hook." This key offers the Morse code operator an investment that will bring years of pride and satisfaction. Try the Benchner "RJ" hand key at your nearby HRO. You will be convinced there is no better key available. **HRO Prices: RJ-1 Black \$139.95; RJ-2 Chrome \$179.95**



### Hex Key

Gold plated silver contacts. Molded acrylic finger paddles. Polished chromium parts. Magnetic tension adjustment and adjustable contact spacing. Black powder coated steel base. **HRO Price \$309.95**

### ST Series Single Lever Paddles

Superb Benchner features and construction for the ham who prefers single lever operation.

**HRO Prices:**

ST-1	Black	\$139.95
ST-2	Chrome	\$154.95



### BY Series Iambic Paddles

You will enjoy the smooth, precise action of a Benchner paddle with any iambic keyer. These paddles feature a heavy steel base, gold plated silver contact points, non-skid feet, stainless steel adjustable spring, self-adjusting needle bearings, and large acrylic finger paddles.

**HRO Prices:**

BY-1	Black	\$164.95
BY-2	Chrome	\$199.95

## KENT Paddles

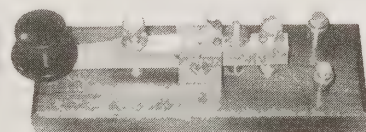


Kent paddles offer a smooth feel with sealed ball bearings.



Precise gap adjustments with knurled heads on fine pitched screws and locking nuts. Made from solid brass within a permanent brass housing.

Twin Paddle	(TP-1)	\$164.95
Single Paddle	(SP-1)	\$159.95



### Straight Key

**Straight Key (SK-1) \$154.95**

**Call HRO for Quotes & Specials**

# VIBROPLEX®

## KEYERS & KEYS

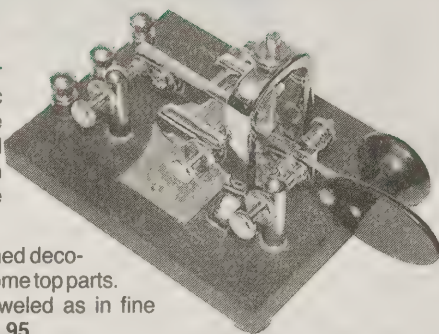
*Quality and Pride Throughout*

### "Vibrokeyer"

The Vibrokeyer is designed for those who prefer a non-lambic paddle. The single lever paddle imitates the automatic dots and dashes of the electronic keyer with the same motion used to operate the "Bug."

**Vibrokeyer Deluxe:** Highly polished decorative chrome base with bright chrome top parts. Silky smooth movements are jeweled as in fine Swiss watches. **HRO Price \$189.95**

**Vibrokeyer Standard:** A neat, crisp black textured finish base with bright decorative chrome parts. Non-jeweled movement. **HRO Price \$154.95**

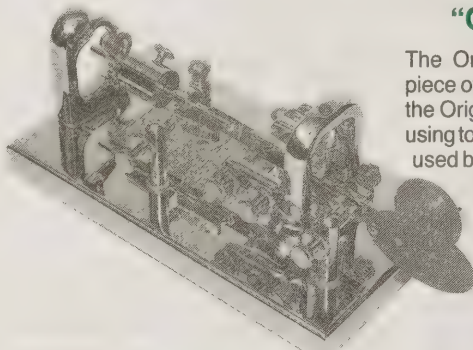


### "Original"

The Original Vibroplex is a genuine piece of history. First patented in 1894, the Original is still manufactured today using tools and dies very similar to those used by its inventor, Horace G. Martin.

Modern-day operators can put their fist to the same equipment as the Western Union and railroad operators of old.

**Original Deluxe** pictured: **HRO Price \$249.95**

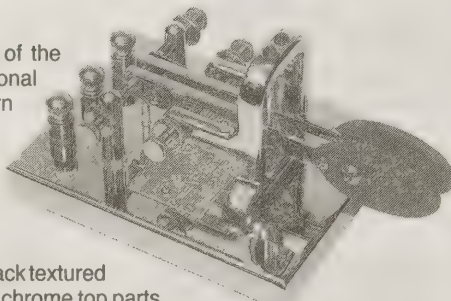


### "lambic"

This is the modern descendant of the Original. It incorporates the traditional Vibroplex look for use with modern electronic keyers.

**lambic Deluxe:** Same as Presentation but without the 24K gold plated brass plate. **HRO Price \$199.95**

**lambic Standard:** A neat, crisp black textured finish base with bright decorative chrome top parts. **HRO Price \$159.95**

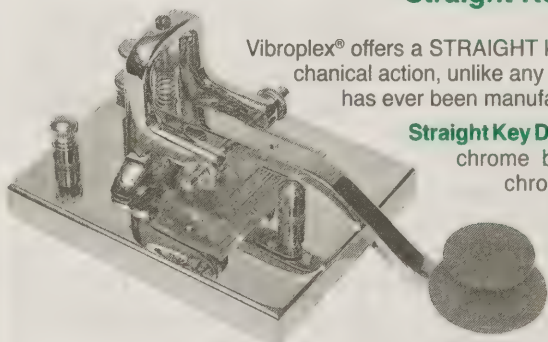


### "Straight Keys"

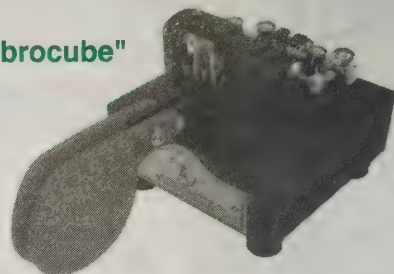
Vibroplex® offers a STRAIGHT key with a unique mechanical action, unlike any other straight key that has ever been manufactured.

**Straight Key Deluxe:** Highly polished chrome base with decorative chrome top parts. **HRO Price \$189.95**

**Straight Key Standard:** A neat, crisp black textured finish base with bright chrome top parts. **HRO Price \$149.95**



### "Vibrocube"

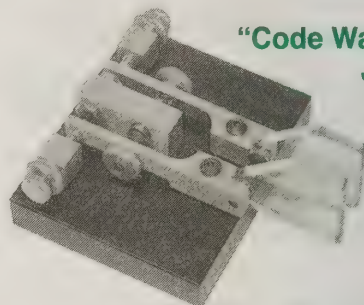


The Vibrocube registers just under 6 pounds on the scale. It is a large paddle that stays in place on the desk and accommodates a large hand comfortably. The base is USA-forged cold-rolled steel, upper components are zinc, steel and brass. The finger pieces are hard red acrylic. Instead of magnetic tensioning, we use a spring loaded method which provides a greater range of possible tension settings than magnets allow.

**Vibrocube Standard:** **HRO Price \$189.95**

**Vibrocube Deluxe:** Like the Standard version with jeweled upper and lower trunion screws, an all-chrome base and all-chrome top components **HRO Price \$289.95**

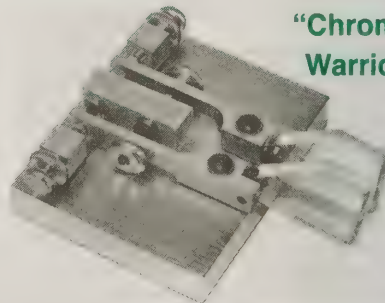
### "Code Warrior Jr"



The Code Warrior Jr. is a small footprint, steel base key with brass top parts and silver tipped copper contacts. Practical for home or portable use. Magnetic return action for wide range of tension adjustment. Weighs just 1 lb 10 oz. Budget priced. Available with black or blue base.

**Code Warrior Jr:** **HRO Price \$99.95**

### "Chrome Warrior Jr"

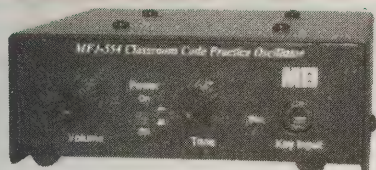


The Chrome Warrior Jr. is identical to the Code Warrior Jr. but has a decorative bright chrome polished steel base.

**Chrome Warrior Jr:** **HRO Price \$139.95**

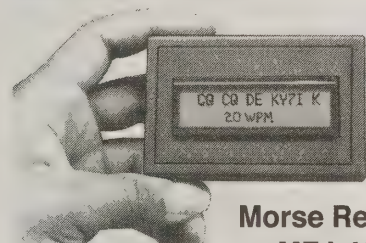


## Morse Practice



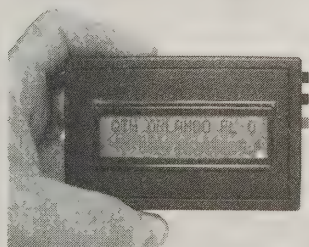
### MFJ-554

The world's finest code practice oscillator is designed for demanding classroom use and abuse. It produces a true pure sine wave side tone with no trace of harsh key clicks. You'll hear the clearest, sweetest sounding CW you have ever heard. Delivers full 1 Watt into built-in 3" speaker - fills an entire room. Low distortion - less than .2% total harmonic distortion from its BTL (Bridge-Tied-Load) amplifier. Volume control, 400-1000 Hz tone control, on/off switch, power on LED, 1/4 inch key jack, 3.5mm external speaker jack uses 12 VDC. All metal enclosure. **HRO Price \$109.95**



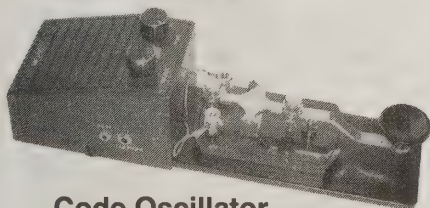
### Morse Reader MFJ-461

Decodes and displays Morse code on two-line high-contrast LCD. Just hold close to receiver. 3-60 WPM. Use 9V, not included. **HRO Price \$99.95.**



### Morse Tutor MFJ-418

Morse Code Tutor has all of the practice you will ever need built into a microprocessor. Work from a beginner to master! 3-60 WPM. Use 9V, not included. **HRO Price \$99.95.**

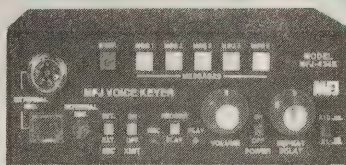


### Code Oscillator MFJ-557

Practice sending Morse code. Telegraph key, code oscillator, speaker on heavy non-skid steel base. Volume / tone controls. Use 9V battery. **HRO Price \$49.95.**

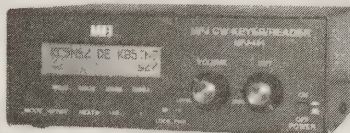
# MORSE READERS & KEYS

## Keyers



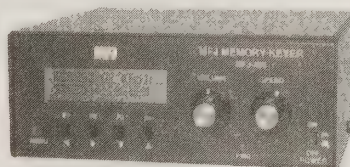
### MFJ-434B

A microprocessor-controlled voice keyer that sends your call and does contest exchanges in your own natural voice. Store frequently used phrases, repeat messages continuously, use 8-pin modular or 8-pin round microphone plug. Record and play back off-air signals. **HRO Price \$219.95**



### MFJ-464

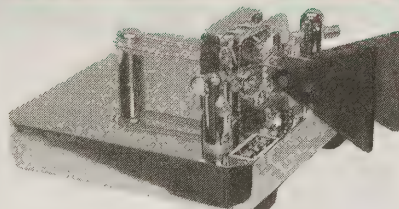
Keyer / Reader. They won't know you never passed the code test! Sends / reads 5-99 WPM. Auto speed tracking. 2-line LCD. Use paddle or keyboard. Easy menu operation. Front panel speed, volume controls. **HRO Price \$219.95**



### MFJ-495

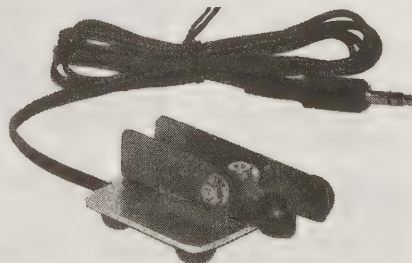
The MFJ-495 Memory Keyer is a full-featured memory keyer combining dual microprocessors and a nonvolatile EEPROM chip for a full featured, low cost, high reliability design. Unlike other keyers, it uses a LCD display to set keyer functions and show the sending message. The MFJ-495 keys CW from a paddle, a keyboard and a serial computer interface. All code parameters are changed with an easy to use menu interface shown on the LCD display. **HRO Price \$189.95**

## Lambic Paddles / Keys



### MFJ-564 Chrome MFJ-564B Black

Chrome lambic paddle features a full range of adjustments in tension and contact spacing, self-adjusting nylon and steel bearings, contact points that almost never need cleaning, precision machine frame and non-skid feet on heavy base. **HRO Price \$99.95 each**



### MFJ-561

Miniature, light-weight lambic paddle fits into an Altoid® tin! Precision formed, perfect for traveling. **HRO Price \$34.95**

## Straight Key



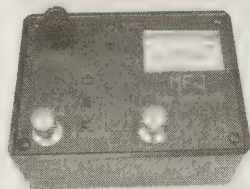
### MFJ-553

Deluxe wood base features a Morse code straight key on a non-skid, beautifully stained wood base. A steel under-plated bottom makes it stay on your table. 3' cable with 3.5 mm plug. Handsome. **HRO Price \$39.95**

*Ham Radio Outlet carries  
many more MFJ items which can be found  
throughout this catalog and on our website at  
[www.hamradio.com](http://www.hamradio.com)*

## Dummy Loads

### MFJ-9218



### QRP Wattmeter + Dummy Load

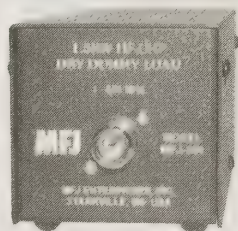
QRP Wattmeter / Dummy Load, rig protection circuit. Handles 5 Watts.

4 W x 1.5 H x 2.75 D inches.

### MFJ-267

### SWR Wattmeter + Dummy Load

Dry Dummy Load / SWR / Wattmeter combination. Three-inch cross-needle SWR meter, 1500 Watt dry load. 1.8 to 30 MHz. Perforated metal.

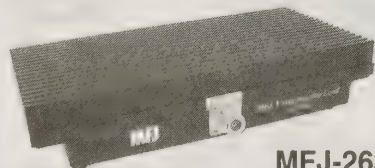


### MFJ-264

HF / VHF dry dummy load covers up to 650 MHz, usable to 750 MHz. Rated 1.5 kW for ten seconds, 100 Watts continuous. Perforated metal cabinet. SO-239.

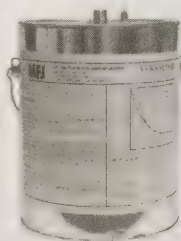
### MFJ-260C

HF / VHF Dry Load is similar to MFJ-264, but handles 300 Watts for 30 seconds. Has derating curve. SO-239.



### MFJ-263

300 W dry dummy load, good to 3 GHz! Mounted on large, heavy-duty air-cooled heatsink. Handles 125 W continuous, 300 W for 10 seconds. Teflon® N connector.



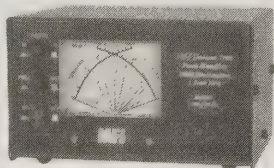
### MFJ-250

1 kW Dummy Load, 50-Ohm. Oil filled, low SWR to 400 MHz. Rated 1 kW CW or 2 kW PEP for 10 minutes. One half rating for 20 minutes. 200 Watts CW or 400 Watts PEP continuous. Includes industrial transformer grade oil (no PCB).



### MFJ-812B

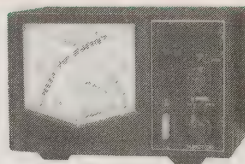
VHF SWR Wattmeter, 2 / 220 MHz, built-in field strength meter. Fwd / ref power in two 30 / 300 W ranges.



### MFJ-815D

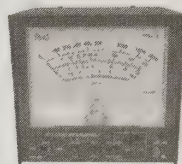
Lighted 3 inch cross-needle meter, 1.8-60 MHz, 300 / 3000 W fwd, 60 / 600 W ref. True peak.

## Giants



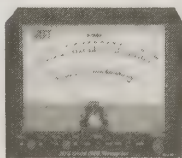
### MFJ-891

Peak-reading giant 4.5 inch cross-needle SWR / Wattmeter. 20 / 200 / 2000 W ranges. Super bright LED backlight. DC grounded antenna connections. SO-239 connectors. 7.25 W x 4.5 H x 4.5 D.



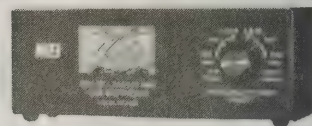
### MFJ-868

Giant SWR / Wattmeter measures 6.5 inches diagonally across face. Covers 1.8 to 30 MHz. Has 20 / 200 / 2000 W ranges for accurate QRP or QRO operation. MFJ Wattmeter Power Saver™ circuit turns on meter only when RF power is being measured. Covers 1.8-54 MHz. Uses 9 V battery or 12 VDC or 110 VAC with MFJ-1312D.



### MFJ-867

Giant 144 / 220 / 440 MHz Wattmeter. Same size as MFJ-868.

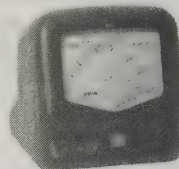


### MFJ-864

Lighted Cross-Needle SWR / Watts, 1.8-60 / 144 / 440 MHz, 30 / 300 Fwd, 6 / 60 Ref. Features separate HF and VHF / UHF directional couplers to connect and monitor separate HF and VHF/UHF transceivers simultaneously.

### MFJ-822

Covers 1.8-200 MHz, 30 or 300 Watts. Cross-needle SWR / Wattmeter for HF / VHF and VHF / UHF (MFJ-842) read forward / reflected power and SWR simultaneously on the huge 3" meter. Perfect for mobile or portable operation. Two selectable power ranges, built-in meter light (+12 VDC). SO-239 connectors. 3-1/4 W x 3-1/4 H x 3-1/4 D inches.



MFJ-860

MFJ-862

MFJ-864

### MFJ-862

Covers 144 / 220 / 440 MHz. 30 / 300 Watts forward, 6 / 60 Watts reflected ranges. 5.64 W x 2.5 H x 2.25 D inches. Has one sensor for all three bands.

## Digital Wattmeter



### MFJ-826B

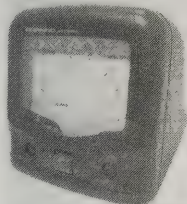
MFJ's high accuracy digital SWR / Wattmeter / frequency counter measures to 1.5 kW at 1.8-54 MHz. True peak or average forward and reflected Watts, SWR and frequency can be simultaneously displayed. You get three high-resolution forward / reflected power ranges that are automatically selected: a true QRP range (25 Watt full scale), a mid-range (250 Watts full scale) and a high-range (1500 Watts full scale). Each range has excellent resolution. Use 12 VDC or 110 VAC with optional MFJ-1312D. Attractive cabinet measures 6-1/2 W x 2-5/8 H x 6 D inches.

# SWR / WATT METERS

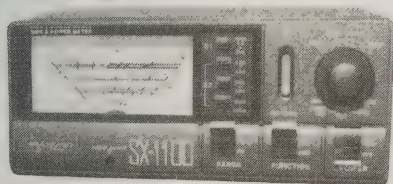
## DIAMOND

### SWR / Watt Meters

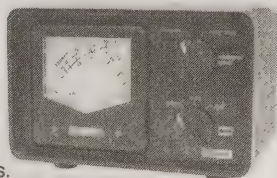
Diamond RF SWR / Watt meters cover the full range of amateur applications. The SX-20C and SX-40C are the newest models. The SX-40C can be used on 220 MHz with a correction factor.



**SX-40C**



**SX-1100**



**SX-240**

All models:

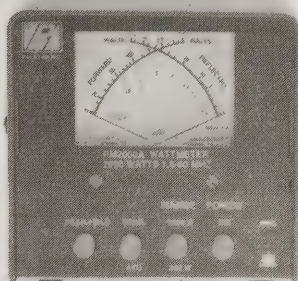
- Illuminated meters.
- Require 12 volts DC.
- Low insertion loss generally less than 0.2 dB in HF range and 0.3 dB at higher frequencies.
- Power measurement accuracy generally  $\pm 10\%$  on higher power ranges and  $\pm 5\%$  on the lower.
- Low loss SO-239 connectors are used except for the high frequencies as noted in the table.
- Measurements are forward power, reflected power, SWR and, on selected frequencies, PEP monitor.

### Diamond Meters

Model	Freq MHz	Power Ranges	Con- nector	HRO Price
SX-20C	3.5-30 50-54 130-150	30/300 W	SO-239	\$89.95
SX-40C	144-470	30/300 W	SO-239	\$79.95
SX-100	1.6-60	30/300/ 3KW	SO-239	\$124.95
SX-200	1.8-200	5/20/ 200 W	SO-239	\$89.95
SX-240	3.5-30 50-54 130-150 430-450	30/300/ 3KW	30/300/ 3KW	\$299.95
SX-400	140-525	5/20/ 200 W	SO-239	\$109.95
SX-600	1.8-160 140-525	5/20/ 200 W	SO-239	\$179.95
SX-1100	1.8-160 430-450 800-930 1230-1300	5/20/ 200 W	SO-239 Type N Type N Type N	\$249.95

## Palstar

### PM2000A Wattmeter



The PM2000A measures and displays forward power (up to 2000 W), reflected power, and SWR simultaneously on its dual movement meter system in the frequency range of 1.8 MHz to 60 MHz. Accuracy of the readings is assured because the PM2000A features a true shielded directional coupler. The backlit meter can display either peak or average power readings with a Peak Hold function, and has 300 and 2000 Watt range settings. **PM-2000A HRO Price \$198.95**

The **PM2000AM** mobile version has a remote coupler that can be mounted up to 14' from the display head.

- PL259 coax connector.
- 115 VAC to 12 VDC adapter included.
- Size: 4.5" x 3.25" x 3.25" deep.
- Weight 1.2 lbs. / 0.55 Kg.

### 24 Hour FAX Order Numbers

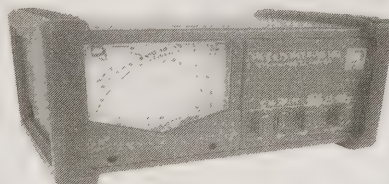
Anaheim	714-533-9485
Atlanta	770-263-9548
Denver	303-745-7394
Milwaukee	414-358-3337
New Castle	302-322-8808
Oakland	510-534-0729
Phoenix	602-395-1244
Plano	972-424-4969
Portland	503-684-0469
Salem	603-898-1041
San Diego	858-560-1705
Woodbridge	703-494-3679



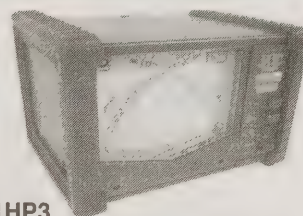
## DAIWA

### CN-501H

- Cross needle design reads forward, reverse and VSWR simultaneously, no calibration required.
- Easy to read meter.
- PEP monitor function.
- Illuminated meter, 12 VDC plug provided.



	CN-501H
Frequency	1.8 - 150 MHz
Power Range	15 / 150 / 1.5 kW
Power Rating	1.5 kW (1.8-60 MHz) 1 kW (144 MHz)
SWR Detection	4 W minimum
HRO Price	\$99.95



### CN-901HP3

#### Professional Series

**HRO Price \$189.95**

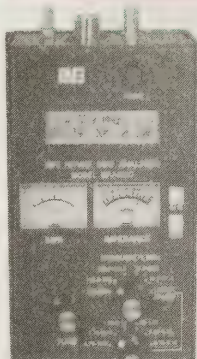
- Easy to read, illuminated, extra large meter face with mirrored graph in .5 watt increments.
- Cross needle design reads forward, reverse and VSWR simultaneously, no calibration required.
- CN-901HP3 is the new 3000 Watt version.
- 12 VDC plug provided.

### Daiwa 901 Meters

	CN-901 HP3	CN-901 V	CN-801 S-II
Frequency	1.8-200 MHz	140-525 MHz	900-2500 MHz
Power Range FWD	20 / 200 / 3 kW	20 / 200 W	2 / 20 W
Impedance	50Ω	50Ω	50Ω
Connectors	SO-239	SO-239	N-Type
SWR Detection	5 W minimum	5 W minimum	0.5 W minimum
HRO Prices	\$189.95	\$149.95	\$239.95

# MFJ

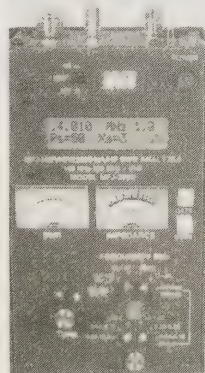
## SWR Analyzers



### MFJ-259D

SWR Analyzer™ with impedance meter reads antenna SWR, complex RF impedance, resistance (R) and reactance (X) or magnitude (Z) and phase (degrees), coax cable loss in dB, coax cable length and

distance to fault, return loss, reflection coefficient, inductance and capacitance. Tells battery voltage. Has huge LCD digital readout with built-in frequency counter, side-by-side SWR and RF impedance meters, Ni-Cd / Ni-MH internal battery charger, battery saver feature, low battery warning, and easy-access batteries. Has smooth, reduction drive tuning. Truly portable. Uses 10 alkaline, Ni-Cd or Ni-MH batteries (not included) or 110 VAC with optional MFJ-1312D.



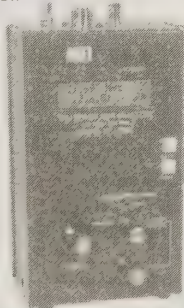
### MFJ-269D

Covers 530 kHz to 230 MHz plus 415 to 470 MHz HF / VHF / UHF. Has all of the features of the MFJ-259D plus a 12-bit A/D converter (gives much better accuracy and resolution), CoaxCalculator™ (calculates coax line length in feet given

coax length in electrical degrees and vice versa) and coaxial characteristic impedance input (zero to six hundred ohms).

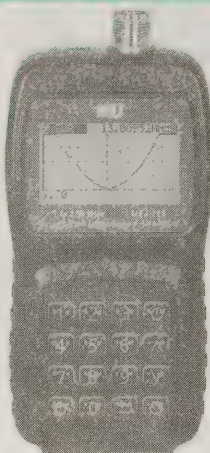
### MFJ-249C

If digital display is all you need, MFJ-249C does everything MFJ-259D does without analog meters.



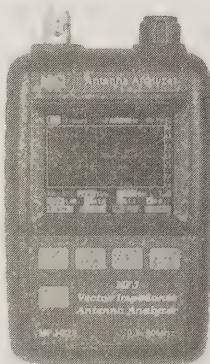
**Questions? Call a  
Friendly Ham at HRO.**

## Antenna Analyzers



### MFJ-226 Antenna Expert

MFJ VNA Antenna Analyzer covers 1 to 230 MHz with 1 Hz resolution. Frequency sweep plots: SWR, Impedance, resistance, reactance, phase angle, complex return loss and Smith Chart. Shows sign of reactance. Features amazing accuracy with OSL (Open-Short-Load) calibration. Easy to read backlit LCD. Fits into your hand perfectly.



### MFJ-223

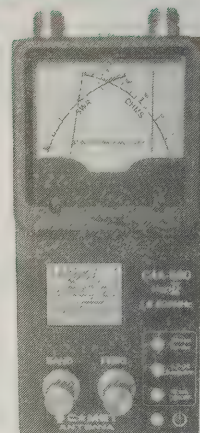
1-60 MHz color graphic VNA analyzer. Pocket-sized, with truly accurate SWR, R, X and Z. Vivid TFT multi-color display. Single-frequency and swept-frequency operating modes. Seamless DDS coverage with 100 Hz resolution from 1-60 MHz. Smooth "skip-free" encoder tunes fast or slow without missing a step. Field strength meter measures local signals, detects potential interference. High-lumen output, easy to read in direct sunlight. Easy setup with only four control switches with convenient on-screen soft menus. Personalized ID function programs your call or name onto the display.

## ANALYZERS

## Antenna Analyzer

# COMET

### CAA500 MarkII 1.8-500 MHz Antenna Analyzer

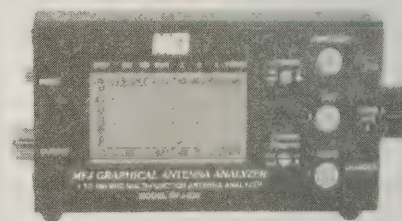


Commercial Grade SWR / Impedance Analyzer Range: 1.8 - 500 MHz (including 222 MHz band). Check antenna installations in just seconds. Determine SWR and resonance instantly. New color TFT display permits easy viewing of frequency and band information, even in the dark. Also has a Band Sweep function that allows you to measure SWR across the selected ham band and view it on the display graph.

Makes SWR adjustments quick and easy. Both SWR and impedance measurements are provided simultaneously. Precision analog meter provides SWR / impedance changes in real time. HRO Price \$439.95

## Graphic Analyzer

# MFJ



### MFJ-225

2.5-180 MHz continuous two-port Graphic Analyzer. A compact, completely self-contained handheld graphing analyzer in the field. On the bench, it becomes a full-fledged two-port (S21) desktop machine when teamed up with your PC. Using powerful IG-miniVNA freeware, you can run detailed data analysis and print out stunning color-graphic plots to document your work. Built-in back-lighted 3-inch LCD graphic display. Full screen, easy-to-view SWR bargraph, capture vivid swept displays for SWR, impedance, return loss, phase angle, and more. DDS generator.

# RigExpert

## ANTENNA ANALYZERS

**When it comes to the installation or maintenance of an antenna, antenna analyzers simplify your work.**

RigExpert™ antenna and cable analyzers help you match your antenna and/or filters, detect cable faults, or check for loss. They are ready for use in the field immediately after powering on and do not need pre- or recalibration.

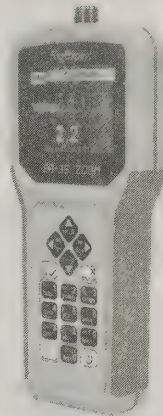
Our instruments have a simple and convenient user interface, as well as a built-in help assistant. All these advantages and high accuracy of measurements make RigExpert™ antenna and cable analyzers indispensable tools for HAM operators and radio engineers.

Uses:

- Rapid check-out of an antenna.
- Tuning an antenna to resonance.
- Antenna SWR and impedance measurement and comparison before and after specific event (rain, hurricane, etc.).
- Making coaxial lines or measuring their parameters.
- Cable testing and fault location.
- Measuring capacitance or inductance of reactive loads.

Analyzers with the Zoom feature use their arrow keys to increase or decrease the center frequency or scanning range. The chart will zoom in or out or change its position.

### HF Analyzers - Zoom



#### AA-35-Zoom

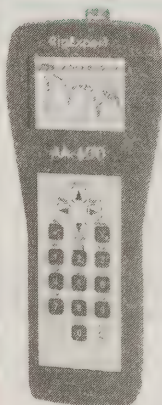
The AA-35 ZOOM is a portable, self-calibrating analyzer, designed for measuring SWR (standing wave ratio), return loss, cable loss, as well as other parameters of cable and antenna systems in the range of 60 kHz to 35 MHz, with incredible ZOOM capability. Uses an SO-239 connector. **HRO Price \$268.95**

#### AA-55-Zoom

This analyzer is designed for measuring SWR (standing wave ratio), return loss, cable loss, as well as other parameters of cable and antenna systems in the range of 60 kHz to 55 MHz. A built-in ZOOM capability makes graphical measurements especially effective. Uses an SO-239 connector. **HRO Prices: \$328.95 With Bluetooth \$378.95**



### UHF Analyzers



#### AA-600

RigExpert AA-600 is a powerful antenna analyzer designed for testing, checking, tuning or repairing antennas and antenna feedlines. Frequency range .01 to 600 MHz

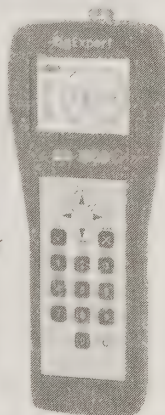
Graphical SWR (standing wave ratio) and impedance, as well as Smith/polar chart displays are key features of these analyzers

which significantly reduce the time required to adjust an antenna. Easy-to use measurement modes, as well as additional features such as connection to a personal computer. **HRO Price \$598.95**

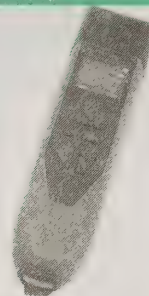
#### AA-1000

RigExpert AA-1000 is a powerful antenna analyzer designed for testing, checking, tuning or repairing antennas and antenna feedlines in the frequency range 0.1 to 1000 MHz.

Graphical SWR (standing wave ratio) and impedance, as well as Smith/polar chart displays are key features of these analyzers which significantly reduce the time required to adjust an antenna. Easy-to use measurement modes, as well as additional features such as connection to a personal computer makes the RigExpert AA-1000 attractive for professionals and hobbyists. **HRO Price \$848.95**



### Analyzer



#### Stick-230

The analyzer is designed for measuring SWR (standing wave ratio), return loss, as well as other parameters of cable and antenna systems in the range of 100 kHz to 230 MHz.

The following tasks are easily accomplished by using this analyzer.

- Rapid check-out of an antenna in the field or stationary conditions.
- Tuning an antenna to resonance.
- Comparing characteristics of an antenna before and after a specific event (rain, hurricane, etc.).
- Measuring capacitance or inductance of reactive loads. **HRO Price \$299.95**

### VHF Analyzers - Zoom



#### AA-230-Zoom

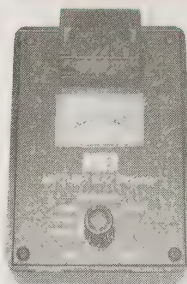
The analyzer is designed for measuring SWR (standing wave ratio), return loss, cable loss, as well as other parameters of cable and antenna systems in the range of 100 kHz to 230 MHz.

A built-in ZOOM capability makes graphical measurements especially effective. An integrated time domain reflectometer mode can be used to locate a fault within the feedline system. Uses Type N connector.

**HRO Price \$438.95 With Bluetooth \$478.95**

**Call HRO Toll Free for Quotes and Specials**

## RFI / Noise Detector



**MFJ-805**  
RFI / Noise  
Detector

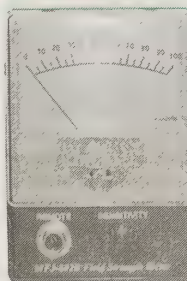
Use this RFI detector to track down and eliminate RFI caused by radiating cables and wires. Find RFI generated by consumer devices, computers and high-tech office equipment. The detector isolates cables picking up RFI and indicates when you've suppressed the problem.

MFJ-805 also works with mobile installations, ferreting out alternator noise, ignition pulses, and microprocessor noise on feedlines and power leads.

With a signal generator you can profile the radiating current distribution of antennas, radials, feedlines, ground systems and control lines.

Easy-to-use. Simply clamp current transformer over suspected cable or wire to detect RFI causing common-mode currents. Super compact 2.25 W x 4.75 H x 1 D inches fits in your shirt pocket. Use 9 Volt battery. Usable from VLF to VHF. Gain adjustable over 50dB range. **HRO Price \$109.95**

## Field Strength Meter

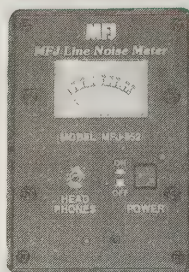


**MFJ-802B**  
Deluxe  
Field Strength  
Meter

**100 kHz  
to 500 MHz**

This new easy-to-use MFJ antenna meter shows the strength of the actual field being radiated from your antenna. You can use it to determine the basic radiation pattern of your antenna and instantly know if it radiates better or worse. You can compare one antenna to another. Find out which HT antenna radiates the stronger signal. Measure your HF antenna now and compare it later to make sure its performance is still up to par. Adjust a ground lead, artificial ground, counterpoise or tune your transmitter or antenna tuner for maximum field strength. The MFJ-802B includes a built-in sense antenna, to simplify measurements. **HRO Price \$59.95**

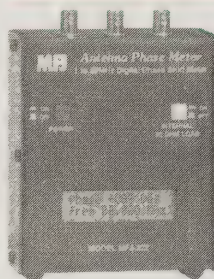
## Power Line Noise



**MFJ-852**  
AC  
Power Line  
Noise Meter

This MFJ handheld power line noise meter lets you walk or drive around the neighborhood to search out leaky insulators, loose hardware and corroded ground lines quickly. You can track the noise source right down to the pole, transformer or insulator. You can also pinpoint faulty dimmers, electric fence arcs, sparking power equipment, neon signs and much more! Let equipment owners hear how troublesome their noise is and see first hand what's causing the problem. **HRO Price \$129.95**

## Antenna Phase Shift



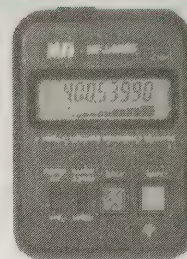
**MFJ-222**  
1-50 MHz  
Precision  
Antenna  
Phase Shift  
Meter

MFJ uses a low-power, high-speed dual comparator circuit to make precision phase measurements between 1 - 50 MHz. A circuit indicates if unknown phase lags or leads the reference signal.

Signals used for measurement can come from an antenna analyzer such as the MFJ-269 or any other generator that will supply at least 1 volt peak output into the load. It has a built-in switchable 50 Ohm load (250 mW max) so the use of an external load and BNC TEE is not needed in most tests. MFJ-222 reads the frequency of the signal so generators with only a coarse or no frequency readout can be used.

Set-up is simple. Plug in the signal generator output to IN, connect the Reference OUT to the input of the network and the output of the network to UNKNOWNIN. Turn it on and read the phase shift and the frequency. A bright two line LCD display allows precision readout of the phase from -180 to +180 degrees without interpreting an analog meter or guessing at the phase polarity. With low power components, it will operate many hours on a single 9V battery or with the optional AC adapter MFJ-1312D. **HRO Price \$149.95**

## Frequency Counter



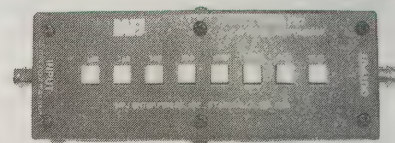
**MFJ-886B**  
Frequency  
Counter

This pocket-sized frequency counter has a large easy-to-read 2 W x 3/4 H 10-digit backlit LCD display and an 11-segment RF signal strength bargraph. It covers 300 Hz to 2.8 GHz with 1 Hz resolution and four selectable gate speeds. The unit measures just 2 3/8 W x 3-1/4 H x 1-1/8 D inches.

Low power consumption with internal lithium battery (800 mAh) and 12 VDC, 1A power adaptor/charger for 110 VAC. Has low battery indicator. Runs for about 12 hours on a single charge! Auto-sleep mode.

MFJ-886B has a 50 Ohm amplifier for 1MHz to 3 GHz operation and a 1M Ohm amplifier for 10 Hz to 50 MHz. It has 45 degree flip stand for easier viewing and a telescoping antenna with BNC connector. A hold button locks the MFJ-886B display and will continually display the last frequency received. There is also an automatic hold mode for locking in on special frequencies. **HRO Price \$139.95**

## Step Attenuator



**MFJ-762**  
Precision Step Attenuator

Step attenuator: 0 to 170 MHz; receive line only: 0 - 81 dB of attenuation; 50 Ohms.

Plot accurate antenna patterns. Connect the attenuator between you receiver and antenna and use your S-meter as a precision calibrated field strength meter. Eliminate blocking and cross-modulation by attenuating strong out-of-band signals before it gets into your receiver. Must be used only in a "Receive" line, not at the output of your transmitter. Connect it to your receiver input to properly terminate your preselector at all frequencies to insure good out of-band filtering. Use it to determine gain and loss and to evaluate linearity of circuits. measure input and output level differences. Isolate one circuit from another. Change unknown reactive loads and sources by known levels. Extend the range of sensitive measuring equipment. **HRO Price \$99.95**

## DC Power Strips



**MFJ-1118**

High current multiple DC outlet. Use for two HF and / or VHF transceivers and six or more accessories from your transceiver's main 12 VDC power supply.



**MFJ-1117**

To power four HF / VHF radios (two at 35 amps each and two at 35 combined) simultaneously.



**MFJ-1116**

Deluxe multiple DC power outlet. 8 outlets for powering accessories.



**MFJ-1112** is like the MFJ-1116 without on / off switch, voltmeter and fuse. 6 pair outlets.



**MFJ-1129**

Get the best of both connectors. Has Anderson Powerpoles® and high-current binding posts. Outlets 1, 2, 4-8 are Powerpoles®, outlet 3 is a 35 A high current binding post. Includes 7 pairs of Powerpole® 35A contacts, ten fuses.



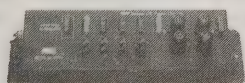
**MFJ-1128**

12 outlets, factory installed fuses, handles 20 amps total.



**MFJ-1126**

8 outlets. (12) 35A contacts.



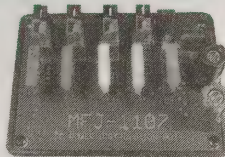
**MFJ-1124**

6 outlets. (8) 35A contacts.

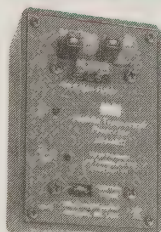
## DC Power Distribution Box

**MFJ-1107**

Four sets of PowerPole® outputs, a total of 40A, one binding post input, 40A. Two 2.1 mm center positive power plugs for accessories. PowerPole® mating connectors included. 4 W x 1.5 H x 2.75 D inches. **HRO Price \$49.95**



## Rig Protection



**MFJ-4402 for Mobiles**

Protect your mobile rig from many unseen operating problems found in vehicles today. A built in surge protection diode reduces the chance a high voltage spike will damage your rig, and

has reverse polarity protection.

MFJ-4402 will shut down your rig if the voltage gets too low for proper vehicle operation. A delay timer, which is controlled off the ignition sense line ensures your rig does not turn on until normal voltage is reached.

MFJ-4402 connects to your rig with Anderson PowerPoles® for high-current lines and a bayonet lug to the ignition sense line. A 30A fuse protects for over-current or reverse voltages. Fits nicely into a vehicle installation with its compact size of 2-7/8 W x 4 H x 1-1/2 D inches.



**MFJ-4403**

Transceiver voltage conditioner provides reverse, over-voltage, voltage transient, and short circuit protections. Gives superb noise and ripple filtering and power supply buffering for your base, portable, or mobile transceiver. MFJ-4403 protects against accidental reverse voltage connection, alerting with a bright warning LED. Once DC polarity is corrected, MFJ-4403 recovers and operates normally.

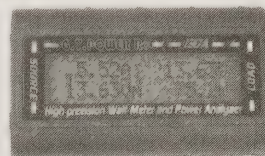
Heavy duty transient suppressor handles peak currents up to 200A. Four farads of ultra high value capacitors filter off virtually all power supply noise and ripple, and provide power supply buffering. For temporary mobile operation like a rental car, run your transceiver a full 100 W SSB from your 10-15 A cigarette lighter socket. Standard Anderson PowerPole® connectors are used for the DC input and output. Compact 4 W x 3 H x 2 D inches.



**MFJ-4422**

## Volt / Amp Panel Meter

4.5-30 VDC / 30 A Digital Volt / Amp Panel Meter with built in Current Shunt. Connect inline to monitor voltage and current of your mobile radio or accessory. Displays voltage and current simultaneously with dual .28 inch red / blue LED digits. Input / output with Anderson PowerPoles®. Handles up to 30 A. Reverse polarity protected. 3 W x 2 H x 1 D inches.



**MFJ-4424**

## Wattmeter / Power Analyzer

High Precision Wattmeter / Power Analyzer displays Amps, Volts, and Watts continuously from 4.8-60V. Measure current, peak current, power and peak power. Input / output with Anderson PowerPoles®. Backlit LCD display. 3.25 W x 1.75 H inches.

## Mobile Digital DC Voltage Monitors



**MFJ-4431**



**MFJ-4432**

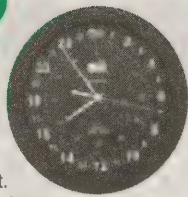
MFJ's new voltage monitors show car battery voltage at all times. Three 3/8" tall bright red LEDs are easily seen day or night. Plug into a cigarette lighter and you are ready to monitor. Use 12 V or 24 V batteries, 8-30 VDC. Built-in fuse. MFJ-4431 comes with a mounted display, adhesive, plug with 2 foot wire. Module is a compact 2-5/8 W x 1-3/8 H x 2-1/4 D. MFJ-4432 is an all-in-one plug/module, 1-1/2 W x 1 H x 4 D.

# MFJ

# CLOCKS

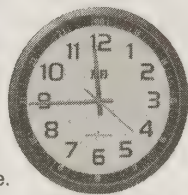
## MFJ-105D

This is the world's most popular ham radio wall clock! True 24 hour quartz movement. Huge 12-inch black face with large white numerals gives excellent visibility across room. Attractive gold colored hour, minute and seconds hands looks great on any hamshack or other wall! **HRO Price \$34.95**



## MFJ-131RC

Large 12-inch diameter analog atomic wall clock. 12 / 24 hour formats displayed under real glass face.



**HRO Price \$49.95**

## MFJ-115

Set this 24 hour Quartz clock to UTC/GMT and you can determine the time in any zone of the world at any time of the day. Premier world cities encircle its colorful world map face to indicate time zone. 12" face is easy to see across room. Seconds hand.

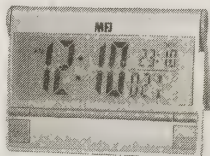
**HRO Price \$34.95**



## MFJ-133RC

Dual time zone LCD Atomic Clock lets you read any two time zones in 24 or 12 hour format. Super compact, attractive silver clock folds up and slides in a shirt pocket.

**HRO Price \$44.95**



## MFJ-123B

24 / 12 atomic. 2-inch digits. True UTC. Day, date, indoor temperature. Solar powered. 9.5" W x 6.25" H x 1" D.

**HRO Price \$59.95**

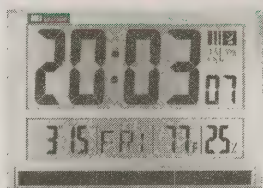
## MFJ-112B

World map clock, shows 12 or 24 hour time anywhere in the world. Also shows day of week, month, date, and year. Time displays hour / minute / second. Daylight savings time feature.

**HRO Price \$39.95**



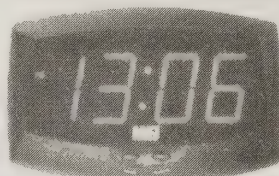
## Jumbos



## MFJ-139RC

This jumbo LCD clock display boasts giant 4 inch digits. The whole display is 15-3/4 W x 10-3/4 H x 3/4 D inches. Place it on a desk with its convenient flip stand or hang on your wall. You never need batteries for this solar-powered clock. Use 24 or 12 hour time format with MFJ exclusive TrueUTC™ time, including Hawaii and Puerto Rico. Select GMT or other time zone on the map. Turn daylight savings time on or off. Includes an indoor thermometer and hygrometer to read indoor humidity. It displays the month, date and day of the week in one simultaneous look at this handsome clock. Beautiful metallic tan color and bright LCD display.

**HRO Price \$99.95**



## MFJ-117

12 / 24 Hour jumbo red LED wall clock. Runs off 110 VAC with 9 V battery time backup. Hour / minute set buttons on front panel.

**HRO Price \$49.95**



## MFJ-113

Switchable 12 / 24 hour display with HUGE 1.8" red LEDs. Absolutely shines from across the room. Super compact 3-1/2 H x 9 W x 2-1/2 D in. Nine minute ID timer, alarm, 9 V battery back-up. Use 110 VAC, 60 Hz. Great for the sight impaired!

**HRO Price \$24.95**

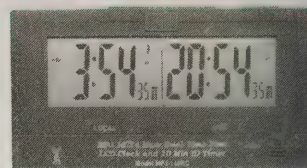


## MFJ-130BRC

12 / 24 hour wall or desk mount atomic clock. Almost 2 inch high digits can be read from across the room. DST can be disabled to accurately read UTC consistently. Running seconds, month, date, day, and indoor temperature are all displayed.

**HRO Price \$34.95**

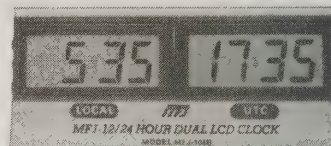
## Dual Displays



## Radio controlled 24 / 12 MFJ-148RC

Especially designed clock for amateur radio. This model has two independent atomic 24 / 12 hour clocks with exclusive UTC time zone and a dedicated station ten minute ID timer. A single time base keeps both clocks perfectly synchronized. It is radio controlled so it keeps perfect time. Set each clock independently for 12 or 24 hour display, time zone, and DST on / off. Built-in 10 minute station ID timer with LED and buzzer alerts. Timer resets by a simple press of a switch. Huge 5 W x 1.5 H LCD display with LED backlights. Flip stand for desk display and mounting hole for wall mount. Uses two AA batteries (not included). Sexy black hard plastic cabinet is 6.5 W x 3.5 H x 3/4 D inches.

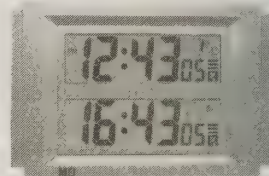
**HRO Price \$69.95**



## 24 / 12 Hour Clock MFJ-108B

Dual clock has separate 24 / 12 hour displays. Read UTC and local time simultaneously. Features huge high-contrast 5/8-inch LCD numerals that makes it easy to read across the room. Mounted in attractive solid brushed aluminum frame with sloped face for easy viewing. Synchronize to UTC for split-second timing. Quartz controlled for excellent accuracy. Long life button battery included. 4 1/2 W x 1 D x 2 H". MFJ one year limited warranty.

**HRO Price \$27.95**



## MFJ-121B

Read both UTC and local time at a single glance with this dual atomic clock. Displays 24 / 12 hour time simultaneously — set each independently. Automatic backlight lights up every day at your preset time for 8 hours. Mounted in a handsome silver-metallic, hard-plastic frame, it has HUGE, easy-to-see 1 W by 2 H inch LCD numerals, an exclusive UTC zone and running seconds display. 11-3/8 W x 7-1/4 H x 1 D mounts on wall or desk mount. Daylight savings time can be disabled independently in each clock display. Uses four AA batteries.

**HRO Price \$99.95**

# EQUIPMENT MOUNTS



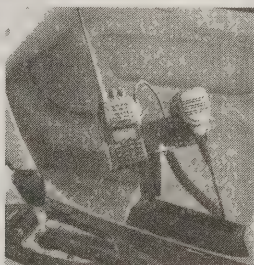
Radios are NOT included. They are shown for illustration purposes only.

## Between the Seats Mount

### LM-Wedge

Plastic device holder wedges between seat and console. Adjustable viewing angle, provides multiple options for installing two devices: Mobile Radio Remote Head, HT, Microphone (Cell phone attaches with the optional LM-H holder) in any combination you prefer. HRO Price

\$49.95



### Floor Mount LM-300

This mount has a 22" Gooseneck Swivel Mounting Pedestal, allowing you to place your device in the perfect position for optimal viewing. Just loosen the passenger seat bolt, slide the mount bracket under the bolt, tighten the bolt. The mount comes with a 4 hole AMPS plate to mount remote heads. HRO Price \$26.95

### Adapter for Yaesu / Icom LM-AD1



Adapter kit for the remote display heads that use the camera style threaded socket to hold the display head to the mount. The kit is sold separately and attaches to all the Lido Mounts. HRO Price \$9.95

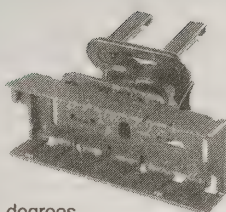
### Rail Mount with Express Plate LM-1000EXP



HRO Price \$19.95

### Vent Mount LM-100

The vent mount has a 4 hole AMPS pattern that can be attached to Alinco, Icom, Kenwood and Yaesu remote head brackets. Swivel 360 degrees for optimal viewing. The vent mount can be installed or removed in seconds. Fits most horizontal vent louvers. It does not work on the large circular vents like those found in Mustangs and PT Cruisers. Remote head bracket not included. HRO Price \$14.95



### Vent Mount w/ Side Grip Holder LM-100H

The vent mount includes a side grip holder for some Kenwood and Icom remote heads. The grip has padded arms and can handle devices from 1 7/8 inches to 4 1/4 inches in height. Easily remove your device to store out of sight when you reach your destination. For use with horizontal air vent louvers. HRO Price \$24.95



### Cup Holder Mount LM-801EXP

The Cup Holder mount works for either an HT or a remote radio head. A flywheel control on the top of the base allows the user to adjust the mount to just about any size cup holder. The mount stands 5 1/2 inches tall and can be installed or removed in seconds. HRO Price \$24.95



LM-802 Metal, heavy-duty version of the LM-801EXP. HRO Price \$44.95

### Side Grip Holder LM-H



Optional side-grip holder fits all Lido Mounts.

Place your device in the LM-H and squeeze the arms together. Push button on the side releases the arms. Holds large size

HT's, remote display heads, GPS units, cell phones etc. HRO Price \$14.95

# DESK STANDS

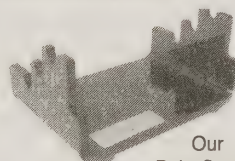
## Nifty!

### Desk Stands

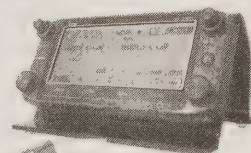


Radio not included

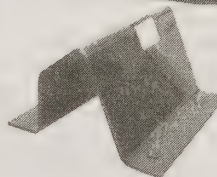
The HT Desk Stand sports a glossy jet black finish. Main support plate and shelf are made of tough, durable polycarbonate and the steel base has a heavy-duty powder coat finish. This thing looks great! Adjustable to fit all hand held radios. Provides solid stable support, holding the radio at a convenient viewing and operating angle. HRO Price \$35.95



Our Universal Wire Bale Stand can be used with any radio equipped with a foldable wire stand, providing an ideal angle for viewing the display and working the controls. It can be used with any radio having a foldable wire stand, including the FT-991, IC-7300, IC-7000, IC-718, TS-2000, TS-590, K3, K3S, DX-SR8T HRO Price \$20.95



Radio not included

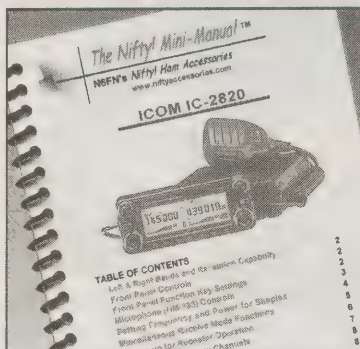


Desk Stands are custom designed to perfectly fit your radio, providing an ideal angle for viewing the display, and stable support for touching buttons on the screen and working the controls. Your radio securely attaches to the stand using two thumbscrews for the mounting holes at the back of the control head. An additional four rubber feet are provided for use with the main body of the radio allowing it to also be placed on the desk top.

HRO Price	Icom ID-5100	\$26.95
HRO Price	Icom IC-2730	\$25.95
HRO Price	Elecraft PX3	\$23.95
HRO Price	Yaesu FTM-400DR	\$24.95

# MINI-MANUALS

## Radio Manuals



## Nifty Mini-Manuals

Mini-Manuals are fully laminated, spiral bound booklets, 4.25 x 8 inches, providing simplified step-by-step instructions for all your radio's features. These short-form manuals are smaller, more durable, and easier to use than manuals normally supplied with a radio.

### Yaesu / Wouxun

Model	Mini-Manual Description	HRO Price
NIFTY-F450D	Mini Manual FT-450D	\$20.95
NIFTY-F857/D	Mini Manual FT-857/D	\$16.95
NIFTY-F791A	Mini Manual FT91A	\$22.95
NIFTY-F7dx1200	Mini Manual FTdx-1200	\$22.95
NIFTY-F72DR	Mini Manual FT-2DR	\$24.95
NIFTY-F7dx3000	Mini Manual FTdx-3000	\$22.95
NIFTY-F7dx5000/DMP	Mini Manual FTdx-5000	\$22.95
NIFTY-FTM-100DR	Mini Manual FTM-100DR	\$22.95
NIFTY-FTM-3200DR	Mini Manual FT-3200DR	\$16.95
NIFTY-F7900R	Mini Manual FT-7900	\$16.95
NIFTY-F7800R	Mini Manual FT-8900	\$16.95
NIFTY-F780R	Ref Card FT-80R	\$6.95
NIFTY-F7250R	Ref Card FT-250R	\$5.95
NIFTY-F7270R	Ref Card FT-270R	\$6.95
NIFTY-FTM400XDR	Mini Manual FTM-400XDR	\$24.95
NIFTY-VX8R	Mini Manual + Ref Card VX8R	\$20.95
NIFTY-KGUV3	Ref Card KGUUV 1/2/3	\$6.95
NIFTY-KGUV8 Amateur	Ref Card KGUUV8 series	\$6.95
NIFTY-KGUV8	Dual Card Set KGUUV8	\$7.95

### MFJ

Model	Mini-Manual Description	HRO Price
NIFTY-MFJ259C	Mini Manual MFJ-259C	\$12.95
NIFTY-MFJ269/C	Mini Manual MFJ-269/C	\$12.95

### Icom

Model	Mini-Manual Description	HRO Price
NIFTY-IC-T70A	Ref Card IC-T70A	\$6.95
NIFTY-IC-718	Mini Manual IC-718	\$16.95
NIFTY-IC-2730	Mini Manual IC-2730	\$16.95
NIFTY-IC-7100	Mini Manual IC-7100	\$26.95
NIFTY-IC-7300	Mini Manual IC-7300	\$22.95
NIFTY-IC-7610	Mini Manual IC-7610	\$24.95
NIFTY-IC-9700	Mini Manual IC-9700	\$24.95
NIFTY-ID-31A	Mini Manual + Card ID-31A	\$24.95
NIFTY-ID-51A Plus 2	Mini Manual + Ref Card	\$24.95
NIFTY-ID-4100	Mini Manual ID-4100	\$24.95
NIFTY-ID-5100	Mini Manual ID-5100	\$24.95

### Kenwood

Model	Mini-Manual Description	HRO Price
NIFTY-TH-D72A	Mini Man + Ref Card	\$24.95
NIFTY-TH-K20/K40	Ref Card TH-K20/40	\$6.95
NIFTY-TH-D74A	Mini Man + Ref Card	\$24.95
NIFTY-TM-D-710G	Mini Manual TM-D710G	\$22.95
NIFTY-TM-V71A	Mini Manual TM-V71A	\$18.95
NIFTY-TS-2000	Mini Manual TS-2000	\$18.95
NIFTY-TS-480S/HX	Mini Manual TS-480	\$18.95
NIFTY-TS-590S/G	Mini Manual TS-590S/G	\$19.95

### Alinco

Model	Mini-Manual Description	HRO Price
NIFTY-DJ-500T	Ref Card DJ-500T	\$5.95
NIFTY-DJ-G7T	Mini Manual DJ-G7T	\$22.95
NIFTY-DX-SR8	Mini Manual DX-SR8T	\$16.95
NIFTY-DR-135/235/435	Ref Card DR-135/235/435	\$6.95
NIFTY-DR-635T	Mini Manual DR-635T	\$19.95

### Miscellaneous

Model	Mini-Manual Description	HRO Price
NIFTY-MM-BandPlan	Amateur Radio Band Plan	\$10.95
NIFTY-D-STAR-BOOK	E-Z Guide to D-Star Operations Book	\$15.95
NIFTY-DXGUIDE	DX Field Guide Book	\$17.95
NIFTY-PSK31-BOOK	E-Z Guide to PSK31 Operations	\$14.95
NIFTY-RADIOMG	Radio Monitoring Guide	\$15.95
NIFTY-ECHOLINK-BOOK	Guide to Echolink	\$15.95
NIFTY-K3	Mini Manual Elecraft K3	\$22.95
NIFTY-KX2	Mini Manual Elecraft KX2	\$20.95
NIFTY-KX3	Mini Manual Elecraft KX3	\$22.95
NIFTY-P3	Mini Manual Elecraft P3	\$10.95

# STUDY AIDS



**Gordon West**

**Study with the Best!**

Part Number Description HRO Price

### Study Manuals

GWTM	Technician Class Book	\$24.95
GWTV	Technician Audio Theory Course on 4 CDs	29.95
NCS	Tech Book plus Software Package	34.95
GWGM	General Class Book	24.95
GWGV	General Audio Theory Course on 4 CDs	29.95
GWEM	Extra Class Book	32.95
GWEW	Extra Audio Theory Course on 6 CDs	44.95
ECS	Extra Book plus Software Package	46.95
HOS	W5YI Ham Operator Software - no books	29.95
HOSB	W5YI Ham Operator Software plus 3 books	99.95
GUS	General Book + software	34.95

### Morse Code Study Materials

GW05	Morse Code 0-5 wpm 8 CDs	39.95
GW13	Morse Code 6-16 wpm 8 CDs	39.95
GW20	Morse Code 10-28 wpm 8 CDs	39.95
GWCT	CW Refresher Course 0-5 wpm, 2 audio CDs	14.95

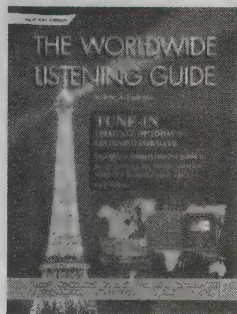
### Other Books

GSE	Getting Started in Electronics	19.95
MINI-4	Mini Notebook, Vol. 4: electronic formulas, symbols and circuits	12.95
BELC	Basic Electronics	19.95
BDE	Basic Digital Electronics	17.95
BCE	Basic Communications (analog) Electronics	17.95
GROL	Get Your Commercial Radio License - Book	49.95
GRSP	Get Your Commercial Radio License - Book plus W5YI Study Software Package	79.95

**Call HRO Toll Free for Quotes and Specials**

# AMATEUR BOOKS

## SWL Guides



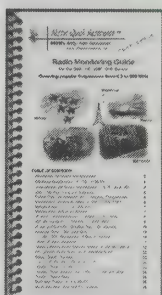
### Worldwide Listening Guide 9th Edition

by John Figliozzi

New and expanded 9th Edition provides comprehensive program guide to all of the ways programs can be heard: "live," on-demand, WiFi, podcast, satellite, internet, digital, and, of course, analog AM, FM, and SW. Spiral bound to open in a flat, easy-to-use format. **HRO Price \$29.95**

## Nifty!

### Radio Monitoring Guide



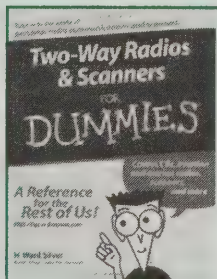
Covering 0.5 to 500 MHz, this reference to short-wave, police, fire, aviation, marine radio and more, combines short-wave listening and VHF / UHF scanning into one guide. Use it as a tuning guide, and for programming the scanning capabilities of your radio.

Has information useful for monitoring radio services including International space station frequencies and NASA re-broadcasting. Amateur radio HF DX propagation beacons, plus Maritime and other popular emergency and communication nets are covered. Web Page URL's are provided to sites offering current broadcast schedules. **HRO Price \$15.95**

## Scanner Books

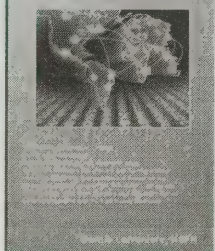
### Two-Way Radios & Scanners for Dummies

**HRO Price \$21.99**



**HRO stocks many books with frequencies for localities around the country. Contact your nearest HRO for details.**

### Nifty E-Z Guide to EchoLink Operation



### Nifty E-Z Guide to EchoLink™ Operation

This ideal reference for those getting into EchoLink shows how to make contacts using your computer or DTMF equipped transceivers.

- Straight forward, simple explanations for both beginning & experienced users.
- Voice over Internet technology.
- EchoLink computer users, simplex links, and repeaters.
- Installing and using EchoLink software.
- Call sign validation and authentication.
- RF Link transceiver requirements.
- Establish RF EchoLink simplex and repeater nodes.
- Create a node by interfacing your transceiver to a computer.
- Configure EchoLink's sysop setup menus.
- Add EchoLink capability to a repeater.
- Numerous clear illustrations.

**HRO Price \$15.95**

## QSL Holders

### QuickView

**HRO Price: \$14.95**



### International

**HRO Price: \$14.95**



## Ham Magazines

CQ  
QST  
QEX  
NCJ  
On the Air

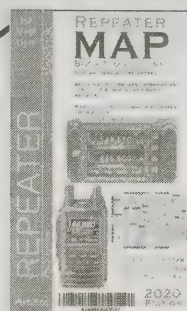
Monthly  
Monthly  
Bi-monthly  
Bi-monthly  
Bi-monthly

## CQ Publications

ARC2020 Amateur Radio Calendar 2020  
UBAUBAU Understanding Building & Using Baluns & Ununs  
LMOA Lew McCoy on Antennas  
HFANTHB HF Antenna Handbook

*art sai*

### U.S. Repeater Map Book 2020 edition USRG



The PERFECT traveling companion. Road maps show major highways and cities in every state. Amateur radio repeater frequencies are included. This is a must for truckers and travelers. Enhanced maps provide great highway detail. **HRO Price \$19.95**

## Ham Adventures

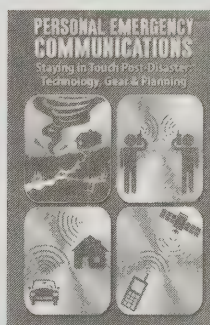
### The Road Home by Andrew Baze



Do you love an adventure? Especially when it includes ham radio in emergency communications, disasters and peril? Do you know any young adults who might be interested in radio? Would you like to learn more about disaster preparedness? Entertaining and informative for young and old alike, this well-reviewed book will hook you from the beginning and take you on a boy and father's trek back from the wilderness to the broken city where the rest of the family waits, unaware of the other danger lurking on their doorstep. **HRO Price \$12.99**

## Personal Emergency Communications

by Andrew Baze



Do you want to be prepared for the next power outage or a natural disaster? This book is written for everyone — no radio expertise required! It will tell you how

to make your own realistic, simple emergency communication plan. When the chips are down, what will you do if your cell phone, land-line, and the Internet don't work? This book has the answer! **HRO Price: \$14.99**



# ARRL BOOKS

## The ARRL Handbook for Radio Amateurs

This 97th edition of The ARRL Handbook is your complete guide to radio experimentation, discovery, and innovation. It is The Handbook -- written by radio amateurs for everyone with a desire to advance the pursuit of wireless technology.

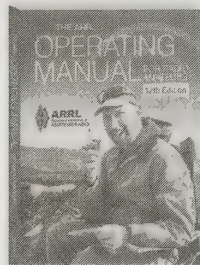
### Key Topics

- Radio electronics theory and principles.
- Circuit design and equipment.
- Radio signal transmission and propagation.
- Digital and analog modulation and protocols.
- Antennas and transmission lines

Construction practices.  
**Softcover #1076 HRO Price \$49.95**

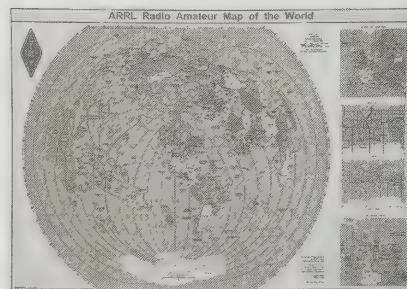
### ARRL Handbook 2020 (Six-Volume Set)

Six-volumes. The ARRL Handbook is divided into six softcover volumes shrink-wrapped together.  
**#1137 HRO Price \$59.95**



## Operating Manual 12th Edition

Everything you need to know about ham radio operating. Four sections: Basic Station Techniques; Radio Clubs and Public Service; On-Air Activities and Radiosport; Resources for the Active Ham.  
**#0598 HRO Price: \$24.95**



### ARRL MAPS

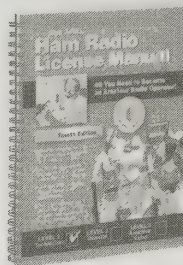
- Map North America Azimuthal #7717
- Map North America Robinson #8804
- Map North America #8977
- GRID ATLAS Grid Locator Atlas #2944
- GRID MAP Grid Locator Map #1290

### ARRL LISTINGS

- DXCC LIST Official ARRL DXCC List #0840
- LB Log Book #1250
- RD Repeater Directory #0758

## Study With ARRL

### Use ARRL License Manuals with ARRL Online Exam Review for Ham Radio

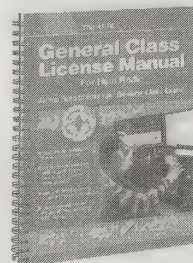


## Ham Radio License Manual

Includes the latest complete question pool with answer key and explanations for use to pass

the 35-question license test. Designed for self-study or classroom use. Take as many randomly-generated practice exams as you want. Discover the unique mix of technology, public service, convenience, and fun that make up ham radio.

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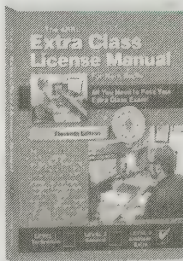
## General Class Ham Course

The fastest way to General Class License  
**9th Edition**

Covers all material you need to pass the General Class License exam. Each topic is divided into bite-sized lessons with colorful illustrations covering procedures, practices, regulations, components, circuits, equipment, propagation, electrical safety and more.

**#1069 Spiral Bound only \$32.95**

## Extra Class License Manual



**11th Edition (12th Edition available July 1)**  
Our expert instruction leads you through all the knowledge needed to pass the 50-question Extra Class exam: rules,

specific operating skills and more advanced electronics theory. To upgrade you must already hold a General Class license then pass a written examination. This manual is valid through 6/30/2020, 12th Edition through 2024 when available.

**#0451 HRO Price \$29.95**

**#0550 Spiral Bound \$29.95**

**12th Edition #1311 Spiral only \$32.95**

## Tech Q&A

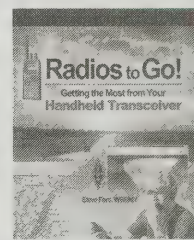
Take a quick, easy path to your first ham license. Pass the 35-question Technician class examination by studying this question pool with brief, clear explanations.

**#0864 7th Edition \$17.95**

**#1335 EXTRA Q&A \$19.95**

**#1106 GEN Q&A (6th ed) \$19.95**

**FRAR FCC Rules & Regs \$7.95**



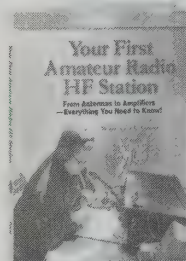
## Radios to Go!

There is a wealth of features in the latest hand-helds. Many of the features are hidden and it is not easy to get full benefit from

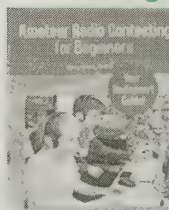
your investment. This publication is an essential guide. **#3077 HRO Price: \$15.95**

## Your First Amateur Radio HF Station

Here is practical advice on choosing your first radio, antenna, computer, software, and accessories. Explains the best way to set them up, how to safely hook up to power while protecting your gear. Explains where to put your priorities. **#0079 HRO Price: \$19.95**



## Amateur Radio Contesting for Beginners



**NEW!**

**Your Roadmap to Radiosport!**

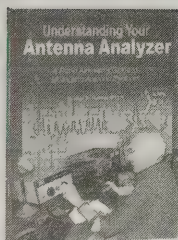
Contesting is one of the most exciting aspects of amateur radio. It's called "radiosport" because it really is a sport -- a competition to see who can contact the most stations in an allotted amount of time. Regardless of the size of your station, you can compete, too!

Amateur Radio Contesting for Beginners includes everything you need to get started. This includes equipment advice, operating guidance, software suggestions, digital contesting tips.  
**#1243 HRO Price \$24.95**

# ARRL BOOKS FOR AMATEURS

## Understanding Your Antenna Analyzer

A radio amateur's guide to understanding antenna analyzers. #2889 HRO Price \$22.95

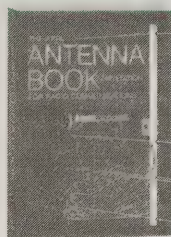


## Antennas

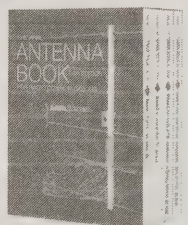
### ARRL Antenna Book

24th Edition

The ARRL Antenna Book for Radio Communications is a single resource covering antenna theory, design and construction, and practical treatments and projects. This book contains everything you need to understand how radio signals propagate, how antennas work, and how to construct your own antenna system. Use The ARRL Antenna Book to build hundreds of antenna designs: dipoles, verticals, loops, beams, and more. Softcover #1113 HRO Price \$49.95

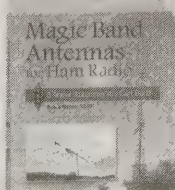


### Limited Edition Four-Volume Set



The ARRL Antenna Book has been divided into four volumes and included in a hard slipcase box. 1024 pages divided into more manageable volumes. A handsome, hard slipcase for easy storage and access. Four volumes covering major topic areas. New and time tested antenna projects across nearly any frequency or mode. A download code to install a fully-searchable digital edition on the printed book. #1144 HRO Price \$64.95

### Magic Band Antennas

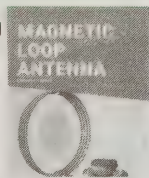


Designed for radio amateurs who want to discover the mysteries of the "magic band." Six meters is a band

full of surprises...When you least expect it, 6 meters can suddenly open for contacts over hundreds and even thousands of miles. #0987 HRO Price \$19.95

### Magnetic Loop Antenna

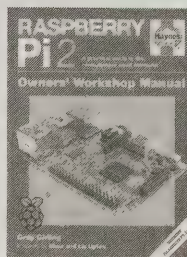
It starts out by providing a theoretical description of magnetic loop antenna (MLA), including a calculation example. Next it describes several types of unique magnetic loop antennas. The final part is devoted to the independent evaluation of magnetic loop antennas. #2005 HRO Price: \$34.95



### MORE ARRL ANTENNA BOOKS

ACVOL5 Antenna Compendium Vol. 5  
ACVOL7 Antenna Compendium Vol. 7  
RSGB-SA Stealth Antenna Book

## Raspberry Pi 2 Workshop Manual



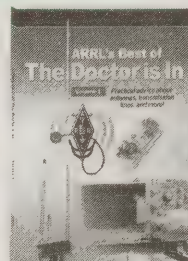
The Raspberry Pi Manual is the perfect introduction to the affordable small computer. Covers the Raspberry Pi 2 (model B). It is aimed at those switching on their Pi for the first time, guiding them through the full process of setup and configuration.

The manual then introduces various aspects of computing and programming, and provides a variety of recipes to demonstrate the acclaimed versatility of the Raspberry Pi's hardware and software. #1022 HRO Price \$28.95

## Best of The Doctor Is In

In Volume 1 of this series, we've gathered the most frequently asked questions, as well as Joel's detailed answers, on the topic of antenna systems. Many answers include comprehensive illustrations.

#0741 HRO Price: \$19.95



NEW!

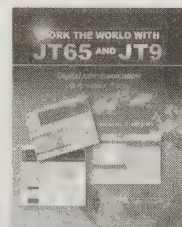
## SDR Software Defined Radio



Everyone is talking about software defined radio (SDR) but is SDR right for you? Software Defined Radio sets out to explain the basics, without getting too technical, and is written to help you to get the most out of your SDR. It will even help you decide what to buy. #7203 HRO Price: \$24.95

## Work The World with JT65 and JT9

Explore a New World of Digital Communication. You don't need high power or large antennas with JT65 or JT9. Shows you how to assemble an effective station and configure the software. #0437 HRO Price: \$15.95



## Portable Operating for Amateur Radio



A new generation of compact, full-featured, portable radios combines with modern battery technology to make it easier than ever to set up your station. #0802 HRO Price: \$19.95

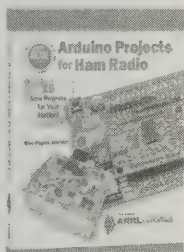
## NEW! RSGB Valve Amplifiers Explained



This new book by John Fielding, ZS5JF, is for everyone who uses - or is considering using - an HF or VHF linear amplifier. While some amateurs may be of the opinion that valves (Tubes) are an obsolete technology and semiconductors are a better way, John Fielding very definitely thinks otherwise! After reading this book you will be under no illusions that, in his opinion, tubes are far superior to semiconductor devices for most linear amplifier applications. #0045 HRO Price \$24.95

## MORE TECHNICAL BOOKS

EMRFD Experimental Methods in RF Design  
HK Hints and Kinks (18th ed.)  
LBD Low Band DXing (5th ed.)  
RFE RF Exposure and You  
RFI Radio Frequency Interference



## More Arduino Projects for Ham Radio

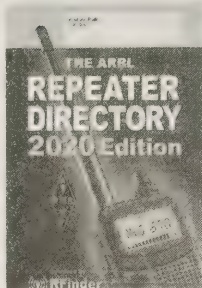
This book includes 15 completely new practical and functional Arduino projects. Each project is complete and functional as-is, but room has been left for you to add personal touches and enhancements. That's part of the fun of the Arduino and Open Source communities - building on the work of others and sharing your designs for others to learn, modify, and improve.

Some projects include:

- Auto on/off mobile power control.
- Station power monitor.
- AC current monitor.
- Load tester.
- Voice memory keyer.
- Wireless remote coax switch.
- Wireless remote telemetry.
- Yaesu rotator controller modification.
- 1 to 30 MHz DDS VFO.
- Antenna SWR analyzer.
- 40 Meter QRP CW transceiver.
- 40 Meter QRP JT65 transceiver.

#0703 HRO Price \$34.95

# FIND A REPEATER

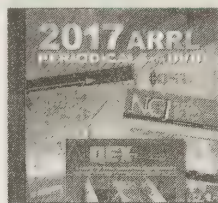


## ARRL 2020 Repeater Directory



The 2020 Repeater Directory® includes "crowdsourced" listings contributed by users, repeater owners, and volunteer frequency coordinators. Public service volunteers: include this printed directory with your emergency "go kit". 28,000+ listings. World's largest printed directory of repeater systems. Listings for US and Canada, organized by state/province, city, and operating mode. Digital repeaters including FUSION, D-STAR, DMR, NXDN, and P25 systems. VHF/UHF and microwave band plans included.

## ARRL Periodicals DVD



## Periodicals DVD Sets

ARRL's popular journals are available on a compact, fully searchable DVD. Every word and photo published through 2017 is included.

- **QST** The official membership journal of ARRL.
- **NCJ** National Contest Journal.
- **QEX** Forum for Communications Experimenters.

Search the full text of every article by entering titles, call signs, names - almost every word. SEE every word, photo (including color images), drawing and table in technical and general-interest features, columns and product reviews, plus all advertisements. Print what you see or copy to other applications. Requires Adobe Acrobat™ Reader a free download from [www.adobe.com](http://www.adobe.com). For Windows and Macintosh systems. **HRO Price \$24.95**

Software is sold on a non-returnable basis. Any software problems will be resolved under the terms of the manufacturer's warranty.

## Catalog Prices

HRO discount prices shown are current as of March 1, 2020, when this catalog was assembled.

Prices change both up and down. Please be sure to call one of our toll-free numbers or check our Web page for the latest prices. We at HRO strive to offer the most competitive prices in the industry on a full line of quality ham radio products.

Many manufacturers offer "coupons" or similar promotions. Call or check our Secure Web Page at <https://www.hamradio.com> for the latest promotions.

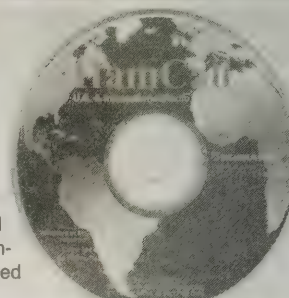
# BUCKMASTER INTERNATIONAL, LLC

## HamCall™ DVD

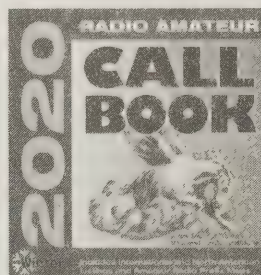
**HRO Price \$49.95**

The first and only database with more than 2,320,000 callsigns; it is the most complete callsign database available. Includes 6 months of internet updates and HamCall.net Gold Password for full access to HamCall.net website including callsign search, advanced search, and DX Spots.

- More than 2,300,00 US and international listings.
- 174,000 e-mail addresses, 7,500 photos and QSL cards, 134,000 vanity calls and 157,000 QSL managers.
- Includes callsign, class, name, address, license issue and expiration dates, birth date, lat/long, grid square, county, time zone, area code.
- Calculates heading and distance, short and long path.



- Install to hard drive or run from DVD.
- Country flag & map for each call sign.
- Search by callsign, class, name, street address, city, state, postal code, county, country, or QSL manager.
- Double click on e-mail address to send email or a web address to visit it.
- Interactive world map display.
- Prints mailing labels or all information.
- Supported by more than 40 logging programs and software packages.



## Radio Amateur Callbook CD-ROM 2020

**#0043-S HRO Price \$49.95**

The Radio Amateur Callbook on CD-ROM contains the callsign and address information of the Amateurs Radio stations all over the world. With more than 1,600,000 licensed radio amateurs, it lets you find the data you are looking for in a fast and easy manner. The Callbook is divided in two databases:

The U.S. and the international database. In the U.S. database, you can search by different fields (call, name, city, ZIP or county). In addition, there is a text search facility. Use the Search menu to start the search. In the international database, you can search by call sign or by text string.

**BONUS USB drive version!** The widely popular Radio Amateur Callbook is now available on a 1 GB flash drive. This bamboo, eco-friendly flash drive features a magnetic cap. Perfect for Amateur Radio operators who use net books or other portable devices which don't have a CD-ROM drive. Free with CD-ROM purchase. System Requirements: Windows XP, Vista, 7 or 8.

## HRO Extended Warranty Program

HRO's Optional Extended Warranty Program extends the original manufacturer's limited warranty on most Amateur Radios, but not for attendant accessories (like batteries, microphones, speakers, etc.) A period of one (1) or two (2) additional years can be selected, and all limitations, exceptions, and exclusions of the original manufacturer's warranty apply during this extended period.

The HRO Extended Warranty Program must be purchased within 30 days of the date the original product(s) was purchased, and is only available to the original

purchaser of the relevant product(s). Neither the benefits nor coverage of this program are assignable or transferable, and verification that the Extended Warranty Program was purchased, product purchase date and serial numbers may be required of the buyer.

The HRO Extended Warranty Program starts at the conclusion of the new product original warranty period, and all Extended Warranty claims must be processed by HRO directly via any one of our store locations.

Further details are available online at [www.hamradio.com](http://www.hamradio.com).

ID-51 Programmer - ID-51 Unlabeled1 \*

File Edit Communications Settings Window Help

ID-51 Unlabeled1 \* X

Receive Frequency

1 144.00000

2 145.70000

3 146.72500

4 147.00000

5 148.00000

6 149.00000

7 150.00000

8 151.00000

9 152.00000

10 153.00000

11 154.00000

12 155.00000

13 156.00000

14 157.00000

15 158.00000

16 159.00000

17 160.00000

18 161.00000

19 162.00000

20 163.00000

21 164.00000

22 165.00000

23 166.00000

24 167.00000

25 168.00000

Transmit Frequency

1 144.00000

2 145.70000

3 146.72500

4 147.00000

5 148.00000

6 149.00000

7 150.00000

8 151.00000

9 152.00000

10 153.00000

11 154.00000

12 155.00000

13 156.00000

14 157.00000

15 158.00000

16 159.00000

17 160.00000

18 161.00000

19 162.00000

20 163.00000

21 164.00000

22 165.00000

23 166.00000

24 167.00000

25 168.00000

Offset Frequency

1 144.00000

2 145.70000

3 146.72500

4 147.00000

5 148.00000

6 149.00000

7 150.00000

8 151.00000

9 152.00000

10 153.00000

11 154.00000

12 155.00000

13 156.00000

14 157.00000

15 158.00000

16 159.00000

17 160.00000

18 161.00000

19 162.00000

20 163.00000

21 164.00000

22 165.00000

23 166.00000

24 167.00000

25 168.00000

Offset Direction

1 Simplex

2 DUP

3 DUP

4 DUP

5 DUP

6 DUP

7 Simplex

8 Simplex

9 Simplex

10 DUP

11 DUP

12 DUP

13 DUP

14 DUP

15 DUP

16 DUP

17 Simplex

18 Simplex

19 Simplex

20 Simplex

21 Simplex

22 Simplex

23 Simplex

24 Simplex

25 Simplex

Operating Mode

1 FM

2 FM

3 FM

4 FM

5 FM

6 FM

7 FM

8 FM

9 FM

10 FM

11 FM

12 FM

13 FM

14 FM

15 FM

16 FM

17 FM

18 FM

19 FM

20 FM

21 FM

22 FM

23 FM

24 FM

25 FM

Name

1 None

2 Windforce

3 Windforce

4 Windforce

5 Windforce

6 Windforce

7 None

8 None

9 None

10 Diagonal

11 Diagonal

12 Diagonal

13 Diagonal

14 Diagonal

15 Diagonal

16 Diagonal

17 None

18 None

19 None

20 None

21 None

22 None

23 None

24 None

25 None

Tone Mode

1 None

2 None

3 None

4 None

5 None

6 None

7 None

8 None

9 None

10 None

11 None

12 None

13 None

14 None

15 None

16 None

17 None

18 None

19 None

20 None

21 None

22 None

23 None

24 None

25 None

CTCSS

1 88.5 Hz

2 88.5 Hz

3 88.5 Hz

4 88.5 Hz

5 88.5 Hz

6 88.5 Hz

7 88.5 Hz

8 88.5 Hz

9 88.5 Hz

10 88.5 Hz

11 88.5 Hz

12 88.5 Hz

13 88.5 Hz

14 88.5 Hz

15 88.5 Hz

16 88.5 Hz

17 88.5 Hz

18 88.5 Hz

19 88.5 Hz

20 88.5 Hz

21 88.5 Hz

22 88.5 Hz

23 88.5 Hz

24 88.5 Hz

25 88.5 Hz

Rx CTCSS

1 88.5 Hz

2 88.5 Hz

3 88.5 Hz

4 88.5 Hz

5 88.5 Hz

6 88.5 Hz

7 88.5 Hz

8 88.5 Hz

9 88.5 Hz

10 88.5 Hz

11 88.5 Hz

12 88.5 Hz

13 88.5 Hz

14 88.5 Hz

15 88.5 Hz

16 88.5 Hz

17 88.5 Hz

18 88.5 Hz

19 88.5 Hz

20 88.5 Hz

21 88.5 Hz

22 88.5 Hz

23 88.5 Hz

24 88.5 Hz

25 88.5 Hz

DCS Policy

1 Both N

2 Both N

3 Both N

4 Both N

5 Both N

6 Both N

7 Both N

8 Both N

9 Both N

10 Both N

11 Both N

12 Both N

13 Both N

14 Both N

15 Both N

16 Both N

17 Both N

18 Both N

19 Both N

20 Both N

21 Both N

22 Both N

23 Both N

24 Both N

25 Both N

Digital Scat

1 5 kHz

2 5 kHz

3 5 kHz

4 5 kHz

5 5 kHz

6 5 kHz

7 5 kHz

8 5 kHz

9 5 kHz

10 5 kHz

11 5 kHz

12 5 kHz

13 5 kHz

14 5 kHz

15 5 kHz

16 5 kHz

17 5 kHz

18 5 kHz

19 5 kHz

20 5 kHz

21 5 kHz

22 5 kHz

23 5 kHz

24 5 kHz

25 5 kHz

Digital Code

1 0

2 0

3 0

4 0

5 0

6 0

7 0

8 0

9 0

10 0

11 0

12 0

13 0

14 0

15 0

16 0

17 0

18 0

19 0

20 0

21 0

22 0

23 0

24 0

25 0

Your Callign

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

- Auto fill for many details.
- Calculations (offset frequency, offset direction, etc) are done for you.
- Allowable values match those of your radio.

*"Each of us guards a gate of change that can be unlocked only from the inside." — Marilyn Ferguson*

447

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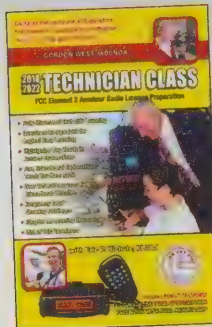
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# Gordon West, WB6NOA & the W5YI Group



## TECHNICIAN CLASS



**Technician Class book for the 2018-2022 entry level exam!** Gordo reorganizes the Q&A into logical topic groups for easy learning! Key words are highlighted in his explanations to help you understand the material for test success. Web addresses for more than 125 helpful, educational sites.

Includes **On The Air CD**

demonstrating Tech privileges. **W5Y GWTM-18 \$24.95**

### Tech Book & Software Package

Gordo's book with W5YI software allows you to study at your computer and take practice exams. Explanations from Gordo's book are on the software – answer a question wrong and his explanation appears to reinforce your learning. Includes free Part 97 Rule Book.

**W5Y NCS-18 \$34.95**

### Tech Audio Course on CD

**Welcome to Gordo's classroom!** Technician audio theory course recorded by Gordo talks you through the Element 2 question pool. Follows the order of his *Technician Class* book, and is full of the sounds of ham radio operating excitement! An excellent study aid if you spend a lot of time in your car or pick-up! On 4 audio CDs.

**W5Y GWTW-18 \$29.95**

## GROL + RADAR



**Get your FCC commercial radio licenses and add valuable credentials to your resume!**

**GROL+RADAR** includes the new FCC Element 1 question pool for the Marine Radio Operator Permit (MROP), the Element 3 pool for the General Radiotelephone Operator License (GROL), and the Element

8 pool for the RADAR Endorsement. Many employers require these licenses for jobs in marine, aero, safety, and municipal positions. Gordo and his team have written clear explanations for all the Q&A to make studying for these exams educational and fun. If you're an Extra Class ham, many of the technical/math questions will look familiar to you. Fully-illustrated to aid your learning. Book includes a searchable CD-ROM with all FCC Rules for Parts 2, 13, 23, 73, 80 and 87.

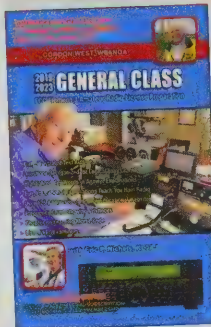
**W5Y GROL-09 \$49.95**

### GROL+RADAR book & software package

Enhance your learning experience using our practice exam software along with the **GROL+RADAR** book. Software includes answer explanations from the book – when you select a wrong answer, the explanation from the book appears to reinforce your learning.

**W5Y GRSP-09 \$79.95**

## GENERAL CLASS



**General Class book Upgrade to the HF bands with Gordo & W5YI!**

Gordo's manual for 2019-2023 reorganizes all 454 questions into logical topic groups for easier learning. His explanations include highlighted key words to help you remember the material for test success.

**W5Y GWGM-19 \$24.95**

### General Book & Software Package

Study at your computer and take practice exams. Software includes explanations from Gordo's book, scores your results and highlights areas that need further study. Includes free Part 97 Rule Book.

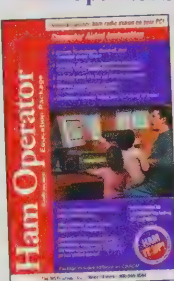
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### General Audio Course on CD

General Theory Course recorded by Gordo is full of the sounds that bring ham radio to life! He talks you through the Element 3 theory to help you understand the material and get you ready for your upcoming exam. On 4 audio CDs.

**W5Y GWGW-19 \$29.95**

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**Want to study at your computer without tying up your internet connection?** This value pack includes the Tech, General and Extra class exams (Elements 2, 3, and 4) along with a free Part 97 Rule Book. Software includes Gordo's answer explanations from his books! Everything you need to go all the way to the top!

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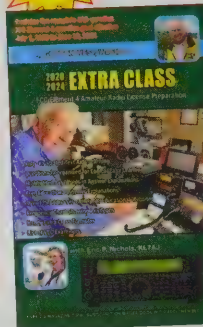
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0-5 wpm CW refresher course on 2 audio CDs **W5Y GWCT \$14.95**  
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## NEW! EXTRA CLASS



**Extra Class book Go to the top with Gordo!** 2020-2024 book includes all Element 4 Q&A

reorganized into logical topic groups. Gordo's fun, educational explanations with highlighted keywords, and great memory tricks for those tough theory questions! Wait 'til you meet "Eli the Ice Man!"

**W5Y GWEM-20 \$32.95**

### Extra Book & Software Package

Study at your computer and take practice exams as the W5YI software scores your results and highlights areas that need further study. Includes explanations from Gordo's book. Free Part 97 Rule Book.

**W5Y ECS-20 \$46.95**

### Extra Audio Course on CD

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### Getting Started in Electronics



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This is a complete electronics course in 128 pages! This famous electronics inventor teaches you the basics, takes you on a tour of analog and digital components, explains how they work, and shows how they are combined for various applications. Includes circuit

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### Engineer's Mini Notebooks



These Mims classics teach you hands-on electronics! Study and build 100s of practical circuits and fun projects. Each volume contains several of his famous Mini Notebooks. Terrific ideas for science fair projects and a great way to learn about electronics!

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HRO 4-20

# KENWOOD

**3rd IMDR 110 dB\***

**RMDR 122 dB\***

**BDR 150 dB\***

## Performance Exceeding Expectations.

The most happy and sublime encounters happen in the worst circumstances and under the harshest conditions.

There are enthusiasts who know this all too well because of their love of HF radio.

Results born of certainty and not circumstance. Delivered through impeccable performance. This is our offering to you.



"The Kenwood TS-890S has the highest RMDR of any radio I have ever measured."

- Rob Sherwood - NC0B - December 2018

HF/50MHz TRANSCEIVER

# TS-890S

**NEW**

### Top-class receiving performance

3 kinds of dynamic range make for top-class performance.

- ▶ Third order intermodulation Dynamic Range (3rd IMDR) 110dB\*
- ▶ Reciprocal Mixing Dynamic Range (RMDR) 122dB\*
- ▶ Blocking Dynamic Range (BDR) 150dB\*

\*Values are measured examples. (20Hz spacing 14.1 MHz, CW, BW 500 Hz, Pre Amp OFF)

- ▶ Full Down Conversion RX
- ▶ High Carrier to Noise Ratio 1st LO
- ▶ H-mode mixer

### 4 kinds of built-in roofing filters

500Hz / 2.7kHz / 6kHz / 15kHz (270Hz Option)

### 7 inch Color TFT Display

- ▶ Roofing frequency sampling band scope
- ▶ Band scope auto-scroll mode
- ▶ Multi-information display including filter scope

### Clean and tough 100W output

Built-in high-speed automatic antenna tuner

32-bit floating-point DSP for RX / TX and Bandscope

\*: 2 kHz spacing measurement standard - Receiver frequency 14.2 MHz, MODE CW, BW 500 Hz, PRE AMP OFF

Customer Support: (310) 639-4200



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ADS803519



We are proud to be a part of Seminole Wire & Cable family of brands which includes JSC brand coaxial cables.  
Our Cable Assembly and Wire manufacturing plants are located under one roof.  
**Yes, we manufacture our own Coaxial Cables!**

### RG-8X COAXIAL ASSEMBLY-15 YR GUARANTEE

ATTENUATION		KEY FEATURES
MHz	db/100ft	HF applications 1-30 MHz
1	0.3	Maximum 875 Watts
10	0.9	Lightweight and portable
30	2	Direct Burial with waterproof shrink tubing
50	2.3	Standard lengths (ft): 1.5, 3, 6, 9, 12, 18, 25, 50, 75, 100, 150.

### RG-213 COAXIAL ASSEMBLY-15 YR GUARANTEE

ATTENUATION		KEY FEATURES
MHz	db/100ft	MIL-C-17
10	0.55	Non-Migrating PVC Jacket
50	1.3	LOW LOSS HF COAX
100	1.9	Direct Burial with waterproof shrink tubing
200	2.3	Standard lengths (ft): 1.5, 3, 6, 9, 12, 18, 25, 50, 75, 100, 150.

### RG-8/U COAXIAL ASSEMBLY-15 YR GUARANTEE

ATTENUATION		KEY FEATURES
MHz	db/100ft	LOW LOSS
10	0.47	Durable UV Resistant, PVC Jacket
50	1.2	1 - 50 MHz or 6 METERS
100	1.8	Direct Burial with waterproof shrink tubing
200	2.7	Standard lengths (ft): 1.5, 3, 6, 9, 12, 18, 25, 50, 75, 100, 150.

### 400UF COAXIAL ASSEMBLY-15 YR GUARANTEE (9913 Type)

ATTENUATION		KEY FEATURES
MHz	db/100ft	LMR-400 UF (BELDEN 9913) TYPE
30	0.8	Non-Migrating PVC Jacket
50	1.1	LOW LOSS UHF/VHF
150	1.8	Direct Burial with waterproof shrink tubing
450	3.3	Standard lengths (ft): 1.5, 3, 6, 9, 12, 18, 25, 50, 75, 100, 150.

### DBFLEX400 COAXIAL ASSEMBLY-20 YR GUARANTEE

ATTENUATION		KEY FEATURES
MHz	db/100ft	FLEXIBLE LOW LOSS 400
30	0.8	UV and Weather Resistant PE Jacket
50	1.1	LOW LOSS UHF/VHF
150	1.8	Direct Burial with waterproof shrink tubing
450	3.3	Standard lengths (ft): 1.5, 3, 6, 9, 12, 18, 25, 50, 75, 100, 150.

### LMR400 TYPE COAXIAL ASSEMBLY-20YR GUARANTEE

ATTENUATION		KEY FEATURES
MHz	db/100ft	LMR-400TYPE, SOLID CONDUCTOR
30	0.7	UV and Weather Resistant PE Jacket
50	0.9	LOW LOSS UHF/VHF
150	1.5	Direct Burial with waterproof shrink tubing
450	2.7	Standard lengths (ft): 1.5, 3, 6, 9, 12, 18, 25, 50, 75, 100, 150.

COMMON LENGTHS AVAILABLE AT HAM RADIO OUTLET. INQUIRE ABOUT CUSTOM ASSEMBLIES.



FIRST IN TECHNOLOGY

# Be Active: IC-705

Your New Partner for Field Operations

- HF/50/144/430 MHz All Mode, with D-Star DV
- RF Direct Sampling System
- Real-Time Spectrum Scope and Waterfall Display
- Large Touch Screen Color Display
- Compact and Lightweight Design
- BP-272 Battery Pack or 13.8 V DC External Power Supply
- Maximum Output Power 10 W (13.8 V DC), 5 W (BP-272)
- Bluetooth® and Wireless LAN Capabilities
- Full Equipped D-STAR Functions
- Optional Backpack, LC-192, Ideal for Field Operations



**Be Active!**  
In the field with the IC-705



HF/50/144/430 MHz <SSB/CW/RTTY/AM/FM/DV> 10 W TRANSCEIVER

**New**

## IC-705

*Coming Soon*



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For the love of **ham radio.**

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As of Jan. 2020 this device has not been approved by the Federal Communications Commission. This device may not be sold or leased, or be offered for sale or lease, until approval of the FCC has been obtained.

# Upgrades For Your **Ham Shack**

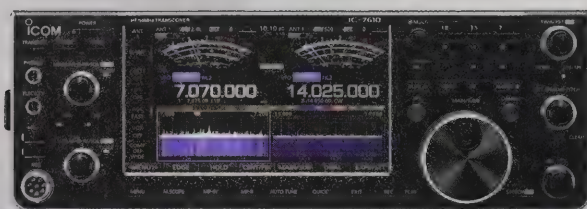


## **IC-9700**

VHF / UHF SDR Transceiver

## **IC-7300**

HF / 6M SDR Transceiver



## **IC-7610**

HF / 6M SDR Transceiver

## **IC-7851**

The Ultimate HF / 6M Transceiver



## **IC-R30**

100 kHz - 3 GHz\*

Wideband Portable Receiver

## **IC-R8600**

10 kHz - 3 GHz\*

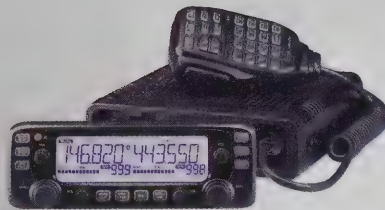
Wideband SDR Receiver



\*Frequency coverage may vary. Refer to owner's manual for exact specifications.

# ANALOG

## IC-V86 2M Portable



## IC-2730A 2M / 70CM Mobile



## IC-2300H 2M Mobile

# D-STAR



## ID-51A PLUS2 2M / 70CM Analog / Digital Terminal and Access Point Modes



## ID-31A PLUS 70CM Analog / Digital Terminal and Access Point Modes

## IC-7100 HF / 6M / 2M / 70CM Analog / Digital



## ID-5100A 2M / 70CM Analog / Digital



## ID-4100A 2M / 70CM Analog / Digital Terminal and Access Point Modes



\*Frequency coverage may vary. Refer to owner's manual for exact specifications.  
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The radio... **YAESU**

## FTDx101

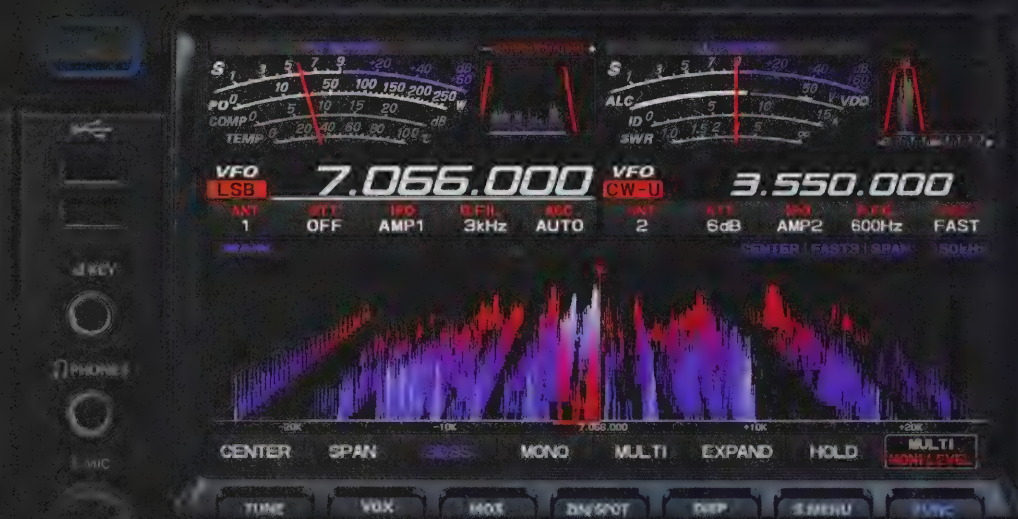
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***Displays the constantly changing band conditions in 3D***  
***Instantly observe changes in the strength of the signals***

- Display up to 25 seconds of previous band conditions in real time
- Simultaneously view output from both Narrow band SDR and Direct Sampling SDR on the display
- Versatile scope and multi-color SDR display configuration enables clear and easy viewed presentation provided by 7" TFT Color touch panel display

**3DSS**  
3D Spectrum Stream

YAESU



HF/50MHz TRANSCEIVER

**FTDx101MP** 200W

HF/50MHz TRANSCEIVER

**FTDx101D** 100W



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The radio

# High Visibility and Operation with a High-Resolution Full Color TFT & Touch Screen Display Superior Performance in a Compact C4FM Digital Transceiver

**System Fusion II Compatible**

**Compact & Reliable 5W RF Power Output**

**700mW of C4FM Exceptional Quality Audio**

**Dual band Simultaneous Receive**

**High Visibility Full-Color  
TFT touch panel Display**

**Built-in High Precision GPS Receiver**

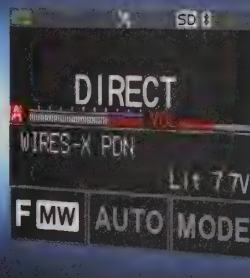
**Easy Hands-Free Operation  
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**High-Resolution and High-Speed  
79 channel Band scope**

**CAM (Club channel Activity Monitor)  
Function**

**FM Friendly Digital by AMS  
(Automatic Mode Select)**

**WIRES-X Portable Digital Node Function**



**C4FM/FM 144/430MHz DUAL BAND  
DIGITAL TRANSCEIVER**

# **FT3DR**

 **Bluetooth®** 

**C4FM**  
Clear and Crisp Voice Technology

**AMS**  
Automatic Mode Select



Actual Size

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C4FM/FM 144/430 MHz  
Dual Band 5W  
Digital Transceiver  
**FT-70DR**  
« 700 mW Loud and Clear audio,  
Commercial Grade Specifications »



C4FM/FM 144/430 MHz  
Dual Band 5 W  
Digital Transceiver  
**FT-3DR**  
« Improved 66 ch  
GPS receiver included »



C4FM/FM 144/430 MHz  
Dual Band 5 W  
Digital Transceiver  
**FT-2DR**  
« Improved 66 ch  
GPS receiver included »

## System Fusion II

*C4FM Digital  
Pursuing Advanced Communications*

Portable Digital Node  
Available



C4FM/FM 144/430 MHz  
Dual Band Dual Receive Digital Repeater  
**DR-2X**

Portable Digital Node  
Available



C4FM/FM  
144/430 MHz Dual Band 50 W  
Digital Transceiver  
**FTM-100DR**  
« Improved 66 ch GPS receiver included »



C4FM/FM  
144/430 MHz Dual Band 50 W  
Digital Transceiver  
**FTM-400XDR**  
« Improved 66 ch GPS receiver included »



C4FM/FM 144/430 MHz Dual Band 50 W  
Digital Transceiver  
**FTM-7250DR**  
« Heavy Duty 50 Watts High Power »



C4FM/FM 144 MHz 65 W  
Digital Transceiver  
**FTM-3200DR**  
« Genuine 65 Watts High Power »



CW/SSB/AM/FM/C4FM  
HF/50/144/430 MHz Wide-Coverage  
100 W All Mode Transceiver (144/430 MHz: 50 W)  
**FT-991A**  
« Real-Time Spectrum Scope included »



C4FM/FM 430 MHz 55 W  
Digital Transceiver  
**FTM-3207DR**  
« Heavy Duty 55 Watts High Power »

*System Fusion II Supports All C4FM Portables and Mobiles*

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# The Perfect Choice Sophisticated Dual Band Digital Transceiver

**Built to Commercial Grade Specifications**



«Actual Size»

**C4FM/FM 144/430MHz DUAL BAND  
5W DIGITAL TRANSCEIVER**

## **FT-70DR**

**C4FM**  
Digital Communication  
Clear and Crisp Voice Technology

**AMS**  
Automatic Mode Select

**Advanced C4FM Digital**

**System Fusion Compatible**

**Combines FM and Digital Communications  
with AMS (Automatic Mode Select)**

**Coordinated Group Operation  
with Digital Group ID**

**700 mW of Loud, Clear Voice, Audio Output**

**5 Watts of Reliable RF Power  
from a Compact Handheld Unit**

**Wide Band Receive Coverage 108 - 579.995 MHz**

**Rugged Construction  
Meets IP54 (Dust & Water protection)**

**Large Multi-Color Operating Mode Indicator**

**Huge 1,105 Channel Memory**

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# DR-2X

144/430MHz Dual Band, Dual Receive  
Heavy Duty C4FM/FM Digital Repeater

## Complete integration and compatibility of Digital and Conventional FM communications

The DR-2X Repeater utilizes the unique Yaesu AMS capability to combine the C4FM digital communication with conventional FM operation

### System Fusion

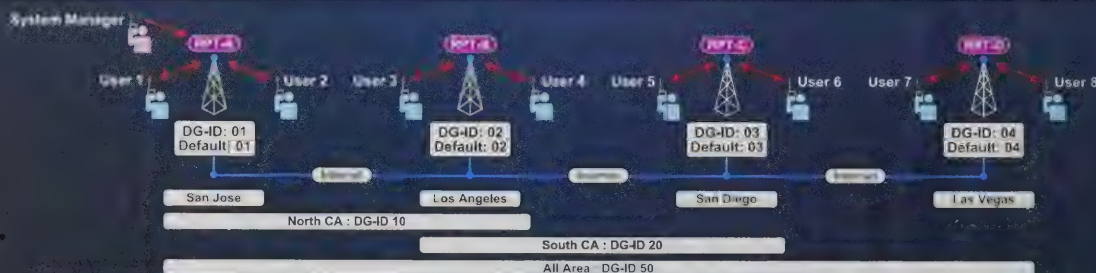


#### ► DR-2X Advanced Features

- AMS (Automatic Mode Select) function, with automatic detection of the received C4FM digital or conventional FM signal
- Dual Receive Operation
- Digital Group ID Feature supports convenient set-up of Groups and uncomplicated Group Operation
- IMRS (Internet-linked Multi-site Repeater System) enables expanded area coverage via the Internet (Optional)
- Extremely reliable, high RF Output Power: 50 W/20 W/5 W
- Commercial grade components for long-term reliable operation
- User Friendly 3.5-inch Full Color Touch Panel Display

#### IMRS (Internet-linked Multi-site Repeater System) Operation

Utilizing the optional LAN units, it is easy to construct an IMRS (Internet-linked Multi-site Repeater System) network with multiple DR-2X Digital Repeaters that are linked together via the Internet (up to 99 repeaters). Access and control of the linked repeaters, and groups of linked repeaters can be managed using the Digital Group ID (DG-ID) Feature.



LOCAL Name		RPT-A	RPT-B	RPT-C	RPT-D
LOCAL DG-ID		01	02	03	04
Default DG-ID		01	02	03	04
Group	Group Name	North CA			
	Group DG-ID	10			
	Group Name	South CA			
	Group DG-ID	20			
	Group Name	All Area			
	Group DG-ID	50			

IMRS (Internet-linked Multi-site Repeater System) Operating Illustration

**YAESU**  
The radio

**YAESU USA**  
6125 Phyllis Drive, Cypress,  
CA 90630 (714) 827-7600

For the latest Yaesu news, visit us on the Internet: <http://www.yaesu.com>

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

# FTM-100DR

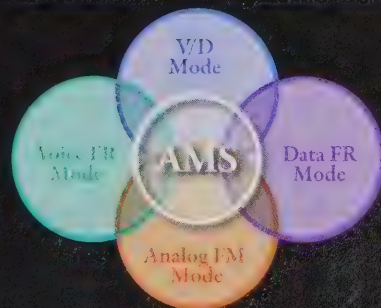
C4FM/FM 144/430 MHz DUAL BAND DIGITAL TRANSCEIVER



## A Digital Mobile Transceiver for a New Age

Advanced C4FM Technology Makes Possible  
a Wide Variety of Mobile Operations

- Easy-to-read graphical interface for user-friendly operation
- C4FM Digital with FM Friendly AMS
- Bright multi-colored Mode/Status Indicator to visibly and clearly inform the current state of the transceiver
- Powerful 50 Watts RF output for VHF/UHF Amateur bands
- Supports WIRES-X internet linking and worldwide communication system for amateur radio
- Establish an internet WIRES-X node station (Requires optional HRI-200)



**C4FM**  
Digital Transceiver  
Clear and Crisp Voice Technology

**AMS**  
Automatic Mode Select

**WIRES-X**  
Internet Linking System

**YAESU**  
The radio

**YAESU USA**  
6125 Phyllis Drive, Cypress,  
CA 90630 (714) 827-7600

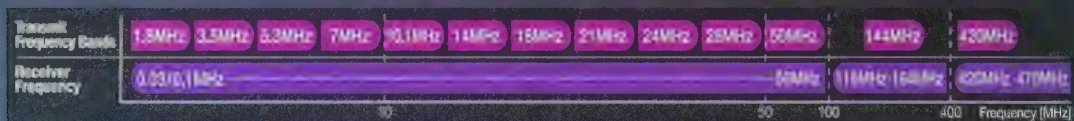
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The radio... **YAESU**

# Wide-Coverage Transceivers

*HF through VHF/UHF in One Radio*



Specified performance: Amateur bands only



*A Superb All-around Transceiver  
with a built-in real-time spectrum scope  
and superior basic RF performance*

HF/50/144/430MHz 100W All Mode Transceiver

## FT-991A

Operating Modes: CW/SSB/AM/FM/C4FM

- Covers all modes SSB/CW/AM/FM and C4FM digital
- Built in Real Time Spectrum Scope with Multi-Color Waterfall Display
- 100 Watts (2 Meter & 70 Centimeter: 50 Watts) of Solid Performance
- IF DSP for Superior Interference Rejection
- 3.5-inch TFT Full-Color Touch Panel Display
- Advanced Support for C4FM Digital

Desktop Microphone &  
External Speaker  
(Optional)



## The Ultimate Backpack Multi-Mode Portable Transceiver

HF/50/144/430MHz 6W All Mode Transceiver

## FT-818ND

Operating Modes: CW/SSB/AM/FM \* C4FM digital mode is not supported

- Incredibly Small Size (5.3" x 1.5" x 6.5") and Light Weight (under 2 pounds)
- High Frequency Stability ( $\pm 0.5$ ppm) TCXO Included
- 6Watts of TX Output Power (AM: 2Watts)
- 1900mAh Ni-MH Battery Pack and Battery Charger Included
- AA Alkaline Battery Operation

**YAESU**  
The radio

YAESU USA

6125 Phyllis Drive, Cypress,  
CA 90630 (714) 827-7600

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The radio... **YAESU**

# Great Pleasure in Operating Wide-Coverage Base Station

With M-1 Superior Microphone and SP-10 Exceptional Sound Speaker



**M-1**  
Ultimate  
Reference Microphone

**SP-10**  
External Speaker  
for FT-991A

HF/VHF/UHF 100 W ALL MODE TRANSCEIVER

# FT-991 **A**

**C4FM**  
DIGITAL CLEAR VOICE  
Clear and Crisp Voice Technology

144/430 MHz 50 W

**AMS**  
Automatic Mode Select

**YAESU**  
The radio

**YAESU USA**  
6125 Phyllis Drive, Cypress,  
CA 90630 (714) 827-7600

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Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu dealer for specific details.

## Buy With Confidence

ABR Industries manufactures all assemblies in our Houston facility, guaranteeing quality control from start to finish. Being a critical component of your system or station, it's important to know where and how your coax cable assemblies are built.

**Not All Cable Assemblies are Created Equal... See the ABR Difference.**



### ABR213 (PN:2213A)

Stranded Center, Solid PE Dielectric, 97% Copper Braid.  
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.  
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.

Attenuation per 100ft	Power Rating
0.6dB @ 10MHz	3.43kW
1.0dB @ 30MHz	1.95kW
1.4dB @ 50MHz	1.5kW
2.4dB @ 150MHz	.83kW
4.5dB @ 450MHz	.45kW

- Application – HF workhorse cable. Heavy Duty coax for applications up to 500MHz. To be used with a heavy-duty rotor or stationary antenna systems.
- Lengths 1.5ft to 150ft in stock



### ABR240F (PN:218XATC)

Stranded Center, Gas Injected Foam Dielectric,  
100% Foil + 95% TC Braid.  
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.  
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.

Attenuation per 100ft	Power Rating
0.9dB @ 10MHz	2.16kW
1.4dB @ 30MHz	1.24kW
2.1dB @ 50MHz	0.96kW
3.6dB @ 150MHz	0.55kW
6.3dB @ 450MHz	0.31kW

- Application – HF / Mobile cable. Medium duty coax for applications up to 500MHz. To be used with stationary antennas and light weight rotor applications
- Lengths 1.5ft to 250ft in stock



### ABR400F (PN:25400F)

Stranded Center, Gas Injected Foam Dielectric,  
100% Foil + 95% TC Braid  
Non-contaminating Direct-Burial Ultra-Violet Resistant Jacket.  
W/SILVER-TEFLON PL259 & WEATHERPROOF HST each end.

Attenuation per 100ft	Power Rating
0.8dB @ 30MHz	2.77kW
1.1dB @ 50MHz	2.14kW
1.8dB @ 150MHz	1.22kW
3.3dB @ 450MHz	0.69kW

- Application – HF / VHF / UHF Low Loss cable. Versatile cable for applications to 500MHz. To be used with a heavy-duty rotor, array, or stationary antenna system.
- Lengths 1.5ft to 150ft in stock



### RG316/U Teflon® .100" OD

HT jumpers "antenna attachment for better coverage"

Part#	Description	Length/Ft
23316-NM-3	N Male Both ends .....	3
23316-NM-6	N Male Both Ends .....	6
23316-SM-SF-3	SMA Male-SMA Female .....	3
23316-SM-SF-6	SMA Male-SMA Female .....	6
23316-SM-SF-9	SMA Male-SMA Female .....	9
23316-SM-SF-12	SMA Male-SMA Female .....	12
23316-SM-SF-15	SMA Male-SMA Female .....	15
23316-SM-3	SMA Male Both Ends .....	3
23316-SM-6	SMA Male Both Ends .....	6
23316-SM-PL-3	SMA Male-PL259 .....	3
23316-SM-PL-6	SMA Male-PL259 .....	6
23316-SM-SO-3	SMA Male-SO239 .....	3
23316-SM-SO-6	SMA Male-SO239 .....	6



### ABR400F (PN:25400F)

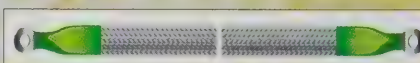
Stranded Center, Gas Injected Foam Dielectric,  
100% Foil + 95% TC Braid  
w/N Male plugs each end. Complete  
w/Weatherproof Heat Shrinking Tubing (WP-HST)

Attenuation per 100ft	Power Rating
0.8dB @ 30MHz	2.77kW
1.1dB @ 50MHz	2.14kW
1.8dB @ 150MHz	1.22kW
3.3dB @ 450MHz	0.69kW

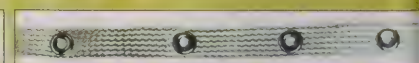
- Application – VHF / UHF Low Loss cable. Versatile cable for applications to 8 GHz. To be used with a heavy-duty rotor, array, or stationary antenna system.
- Lengths 1.5ft to 150ft in stock



1" Tinned Copper Flat Ground Braid.  
7ga 85/Amps w/1/4" Stud Ring Terminals.  
Quick & Easy Grounding Terminations.  
Lengths 3ft to 20ft in stock

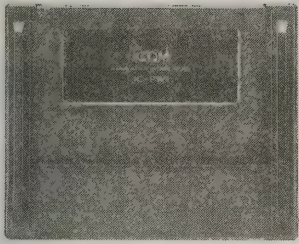


1/2" Tinned Copper Flat Ground Braid.  
10ga 53/Amps w/#10 Stud Ring Terminals.  
Quick & Easy Grounding Terminations.  
Lengths 1ft to 12ft in stock



**233/2-G4-length**  
Unique design (Nickel Grommets 4" Spacing)  
allows for easy attachment to a vehicle's body or  
truck bed to create a "ground plane"  
Good option as a buss-bar in the shack  
1/2" wide tinned copper 38x48x8/34 10ga 53 amps  
Lengths 1.5ft to 10ft in stock

# AMPLIFIERS

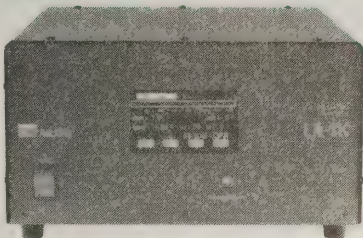


**ICOM®**

## IC-PW1 w/ Solid State Remote Control Head

**1000 Watt Amp**

**Palstar**



**LA-1K**

## Solid State Amplifier

We are pleased to announce that the LA-1K far exceeds all standards in FCC testing at a FCC-certified laboratory and received certification for equipment authorization.

- Cooling: variable speed fans (3 speed).
- Chassis: .090 gauge aluminium.
- Top cover: 090 gauge aluminum powder coated.
- Dimensions: 12.75" wide x 6.25" high x 16.5" deep.
- Shipping weight: 27 lbs, 12.25 Kg.
- Design concept: full compatibility with the Palstar HF-AUTO autotuner.
- Warranty: Two Years.

### Specifications

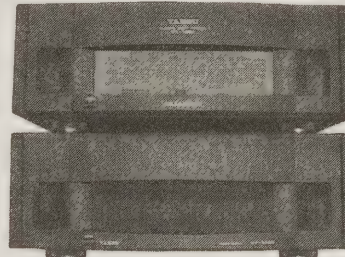
- SSB power: 1000 Watts PEP CW ICAS.
- CW Mode: power levels up to 850 W.
- FM / RTTY: 500 Watts.
- AM: 275 Watts.
- Frequency range: 1.8 to 54 MHz.
- Display: Color TFT touch screen.
- Output: 3 x RF SO-239 or type N.
- ALC: Exciter power control.
- Drive Required: 40-55W (all bands).
- Gain: 13+/-1dB (nominal.)
- RF sensing: auto band switching.
- RF Output: vacuum relay T/R switching.
- Power supply: internal medical grade.
- DC supply: 100 VAC - 260 VAC 50 V @ 42 A.
- Power devices: 2 x 5600 H 600 W LD-MOS.
- Auto-Protect: SWR / short circuit.
- Intermod: low IMD distortion >35dB.
- Pure signal: sample@+10 dBm (rear panel@1 kW output.)

Icom's linear amp provides wide frequency coverage with up to 1kW output requiring only a 100-Watt maximum input. The duty cycle is 100 percent with full break-in operation. It covers amateur bands 160 to 15 meters plus 6 meters. Includes an automatic antenna tuner for all bands. Internal circuitry allows the ALC to be adjusted over a wide range so the PW1 can be used with almost any rig, not just Icom. Operates on 110 or 220 VAC 50 or 60 cycle.

**YAESU**  
The radio

**Quadra System**

Use this linear amp to operate on HF (160-15 meters) and 6 meters. It has automatic band switching with the FT-1000D, FT-1000MP, FT-920, FT-990, FT-991, FTdx1200, FTdx3000, and the FTdx-5000 HF radios. The amp has 8 MRF150 power MOSFet transistors designed into 4 units of 2 transistors in a push-pull circuit at 48 VDC. The separate power supply, the VP-1000, allows easy installation. There are two input voltages, 117 VAC



or 220 VAC. Output power is a function of the power supply voltages. At 220 VAC there is 1000 Watts out on HF and 500 Watts on 6 meters. At 117 VAC the output is reduced to 500 Watts on HF.

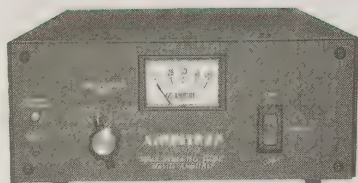
The Quadra has a built-in high speed tuner to match the amp to your antennas. It has four antenna outputs and two inputs. The multifunction omni-glow LCD display shows the status of the amplifier. There is automatic system monitoring with VSWR protection.

## Amplifier Specifications

**\$CALL for HRO Discount Prices**

	Model	Frequency Range	Modes	Power In	Power Out	Voltage	Current	Pre-amp	Connector	Wgt	HRO Discount Price
Ameritron	AL-1500	160-15 M*	SSB, CW	65 W	1500+ W	220 VAC	15 A	-	SO-239	50 lbs	CALL
	AL-1200	160-15 M*	SSB, CW	100 W	1500 W	220 VAC	-	-	SO-239	50 lbs	CALL
	ALS-1300	160-15 M*	SSB, CW	90 W	1200 W	220 VAC	15 A	-	SO-239	22 lbs	CALL
	ALS-1308	160-15 M*	SSB, CW	100 W	1200 W	110/220 VAC	25/12 A	-	SO-239	22 lbs	CALL
	ALS-500M	160-15 M*	SSB, CW	100 W	500 W	13.8 VDC	80 A	-	SO-239	7 lbs	CALL
	ALS-600	160-15 M*	SSB, CW	100 W	600 W	110/220 VAC	16 A 110V	-	SO-239	13 lbs	CALL
	ALS-608	160-8 M	All	75 W	600 W	120/220 VAC	12/6 A	-	SO-239	15 lbs	CALL
	AL-80B	160-15 M*	SSB, CW	100 W	1000 W	110/220 VAC	15/10 A	-	SO-239	54 lbs	CALL
	AL-800	160-15 M*	SSB, CW	100 W	750 W	110 VAC	12 A	-	SO-239	67 lbs	CALL
	AL-800H	160-15 M*	SSB, CW	55 W	1500 W	240 VAC	9 A	-	SO-239	69 lbs	CALL
	AL-811	160-15 M*	SSB, CW	75 W	600 W	110/220 VAC	8/4 A	-	SO-239	40 lbs	CALL
	AL-811H	160-15 M*	SSB, CW	75 W	800W	110/220 VAC	8/4 A	-	SO-239	41 lbs	CALL
Icom	AL-82	160-15 M*	SSB, CW	100 W	1500 W	220 VAC	15 A	-	SO-239	52 lbs	CALL
	IC-PW1	160-15 M*	SSB, CW	100 W	1000 W	110/220 VAC	20/15 A	-	SO-240	55 lbs	CALL
	B-34	144-148 MHz	All	2 W	35 W	12-15 VDC	4 A	-	SO-239	2 lbs	CALL
	B-34G	144-148 MHz	All	2 W	35 W	12-15 VDC	4 A	yes	SO-239	2 lbs	CALL
	BD-35	143-149/430-450	FM	7 W	45 W	12-15 VDC	7 A	-	SO-239	3 lbs	CALL
	B-310G	144-148 MHz	All	4 W	100 W	13.8 VDC	15 A	yes	SO-239	3 lbs	CALL
	B-1018G	144-148 MHz	All	10 W	160 W	13.8 VDC	25 A	10 dB	SO-239	5 lbs	CALL
	B-2518G	144-148 MHz	All	25 W	160 W	13.8 VDC	25 A	10 dB	SO-239	5 lbs	CALL
	B-5018G	144-148 MHz	All	50 W	160 W	13.8 VDC	24 A	yes	SO-239	5 lbs	CALL
	D-1010N	430-450 MHz	All	10 W	100 W	13.8 VDC	20 A	-	N type	5 lbs	CALL
ACOM	D-3010N	430-450 MHz	All	30 W	100 W	13.8 VDC	20 A	-	N type	5 lbs	CALL
	A1000	160-10 M + 6M	SSB, CW	60 W	1000 W	200-240 VAC	2000VA	-	SO-239	48.5 lbs	CALL
	A1010	160-10 M	SSB, CW	50 W	500 W	100/240 VAC	1200VA	-	SO-239	38.7 lbs	CALL
	A1200S	160-10 M + 6M	SSB, CW	40 W	1000W	93/265 VAC	2000VA	-	SO-239	26.5 lbs	CALL
	A1500	160-10 M + 6M	SSB, CW	60	1200 W	100/240 VAC	3500VA	-	SO-239	65 lbs	CALL
	A2000	160-10 M	SSB, CW	50	1500 W	100/240 VAC	3500VA	-	SO-239	96 lbs	CALL
	A2100	160-10 M	SSB, CW	50 W	1500 W	100/240 VAC	3500VA	-	SO-239	65 lbs	CALL
Palstar	LA-1K	1.8-54 MHz	All	40-55W	1000 W SSB	110/260 VAC	-	-	SO-239	27 lbs	CALL
Yaesu	Quadra	160-15 M* + 6 M	SSB, CW	100 W	1000 W	110/220 VAC	†	-	SO-239	21 lbs	CALL

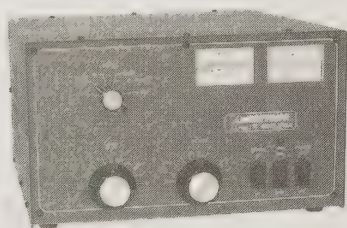
\*Owner modifiable for 10 m #Add 35 pounds. Transformer shipped separately. †VP-1000 power supply inc.  
## Expect long production delays \$ Add 12 pounds. Transformer shipped in separate package.



## Mobile Amp

### ALS-500M

500 W PEP / 400 W CW mobile amplifier with instant band switching, no tuning, no warm up. SWR / load fault / thermal overload protected. On / Off / Bypass switch. Remote on / off control capable. DC current meter with very quiet fan. 1.5-22 MHz (10 / 12 Meters with Mod-10 M option). Options include ALS-500RC remote head and SPS-75MV 110VAC 75A @ 13.8VDC output power supply for using ALS-500M at home.



## Low-Cost Desktop Amp

### AL-811H

800 Watt PEP output. This low-cost desktop linear HF amplifier gives plenty of power to burst through QRM. It will plug right into a 120 VAC outlet. Four tough 811A transmitting tubes, heavy-duty power supply, all HF band coverage, operate / stand-by switch, transmit LED, plus more! UPS shippable. The AL-811 is similar but has three 811A tubes, 600 Watts PEP output.

## Accessories



### ARB-704

## Amp to Rig Interface

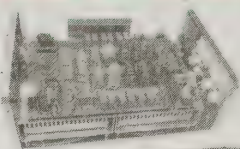
Protects rig from damage by keying line transients and makes hooking up to your rig easy.

## Stop Voltage Spikes

### ICP-120

Stops damaging in-rush current by absorbing high-voltage spikes. Works with nearly all linear amps.

## No-Tune Amps

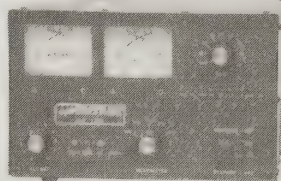


### ALS-1306

## HF+ 6, 1200 W

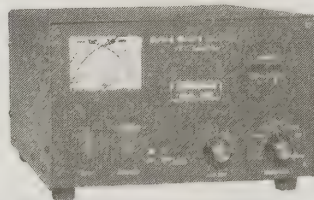
## Solid State Amplifier

Covers 1.5-54 MHz with 1200 Watts PEP Output. Features instant automatic band-switching, no tuning and no warm-up. It is SWR protected with quiet variable-speed cooling. Metering includes PEP FWD / REF, PA balance and ALC with a LED Indicator. There are front-panel band / error LEDs. Front-panel ALC control. The ALS-1306 has modular construction for easy servicing, and is powered by a 50 VDC switching power supply. This compact, operator-friendly and attractive desk-top amplifier fits neatly into any station. Just 10 W x 6.5 H x 18.5 D inches and weighs only 22 lbs.



### ALS-1300

1200W solid state FET no-tune amplifier includes most of the features of the ALS-1306 but no auto band switching and no 6 Meters.

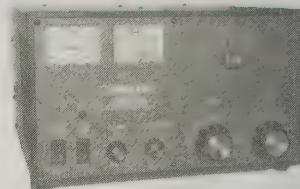


### ALS-600

No tuning, no fuss, no worries – just turn on and operate. 600 Watts PEP / 500 W CW, 1.5-22 MHz, instant bandswitching, SWR protected. 120 / 220 VAC. 9-1/2 W x 6 H x 12 D inches. Includes matching transformer power supply.

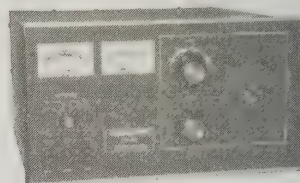
ALS-600S ALS-600 with 10 pound switching power supply.

## Legal Limit Amps



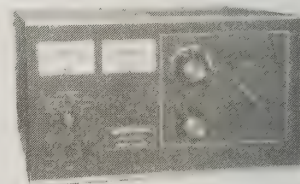
### AL-80B

1 kW PEP output from a compact, desktop linear that plugs into 120 VAC outlet. Classic 3-500G tube, inrush current protection, two year limited warranty.



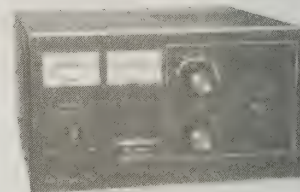
### AL-82

Full legal limit amplifier using a pair of 3-500G tubes. Super heavy duty Hyper-sil® power transformer allows the tubes to be used to their full potential. Two illuminated meters, including one specifically for monitoring grid current. 220VAC. Ships in 3 boxes.



### AL-1200

Full legal limit amplifier using ham radio's toughest tube, the 3CX1300/Z7. The super heavy duty power supply loads at full legal power.



### AL-1500

Ameritron's most powerful amplifier uses a 3C X 1500 / 8877 ceramic tube. 65 W drive gives full legal output.

*For more Ameritron Amps, visit [hamradio.com](http://hamradio.com)*



# HF POWER AMPLIFIERS

**ACOM Amplifiers  
Shown Require No  
Antenna Tuner for  
VSWR of 3:1 or Less**



**ACOM 1000**

The ACOM 1000 HF Linear is the world's best value in an amateur HF amplifier. It gives you a comfortable 1000 Watts output on all amateur bands from 160 through 6 meters.

- Frequency coverage: All amateur bands 1.8-54 MHz. MARS / CAP ready model.
- Power output: 1000W PEP or continuous-carrier, no mode limit.
- Intermodulation distortion: better than 35 dB below rated output.
- Hum and noise: Better than 40 dB below rated output.
- Harmonic output suppression: 1.8-29.7 MHz – better than 50 dB below rated output; 50-54 MHz – better than 66 dB below rated output.
- Input and output impedances:
  - nominal value: 50 Ohm unbalanced, UHF (SO239) type connectors;
  - input circuit: broadband, VSWR less than 1.3:1, 1.8-54 MHz continuously (no tunings, no switching).
  - bypass path VSWR less than 1.1:1, 1.8-54 MHz continuously;
  - output matching capability: better than VSWR 3:1 or greater at reduced output levels.
- RF gain: 12.5 dB typically, frequency response less than 1 dB (50 to 60 W drive power for rated output).
- Primary power: 170-264 V (200, 210, 220, 230 and 240 V nominal taps, 100, 110 & 120 V taps on request, +10%-15% tolerance), 50-60 Hz, single phase, 2000 VA consumption at rated output.
- Complies with CE safety and EMC requirements as well as FCC regulations (6, 10 and 12 m bands lock provided).
- Size & weight (operating):
  - WxDxH: 422 x 355 x 182 mm, 22 kg.
  - (16.6 x 14 x 7.2 inches, 48.5 lbs.)
- Operating environments:
  - temperature range: 0...+50 degs. Celsius;
  - humidity: up to 75% @ +35 degs. Celsius.
  - height: up to 3000 m above sea level without output deterioration. **HRO Price \$CALL**



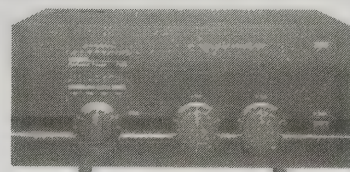
**ACOM 1010**

- Frequency coverage: all amateur bands in the 1.8-29.7 MHz frequency range; extensions and / or changes on request.
- Power output: 700 W PEP or 500 W continuous carrier.
- Intermodulation distortion: better than 35 dB below rated output.
- Hum and noise: better than 40 dB below rated output.
- Harmonic output suppression: better than 50 dB below rated output.
- Input and output impedances:
  - nominal value: 50 Ohm unbalanced, UHF (SO239) type connectors;
  - input circuit: broadband, VSWR less than 1.3:1, 1.8-30 MHz continuously (no tunings, no switching);
  - bypass path VSWR less than 1.1:1, 1.8-30 MHz continuously, 200 W maximum;
  - output (antenna) impedance matching capability: VSWR up to 3:1 or higher.
- 50 to 70 W drive power for rated output.
- Primary power: 85-132 V / 170-264 VAC (100, 110, 120, 200, 210, 220, 230 and 240 V nominal taps), +10% -15% tolerance), 50-60 Hz, single phase, 1200 VA.
- Size and weight (operating): W x D x H: 406 x 315 x 150 mm, 18 kg. (16 x 12.4 x 5.9 inches, 39.7 lbs.)
- Antenna matching can be achieved in less than 10 seconds and at a quarter of nominal output power, which produces lower risk of interference to other stations and greater safety to the amplifier components. **HRO Price \$CALL**



**ACOM 1200S**

- Power output: 1000 Watts +/-0.5dB, PEP or continuous carrier (1200 Watts typically).
- Frequency coverage: 1.8 to 54 MHz.
- Display: Five inch high resolution color display, 800x480 pixels and 24-bits colors.
- Compatible with all transceiver models available on the market.
- Broadband input circuit providing a perfect transceiver load with SWR below 1.2:1 (typically 1.1:1), without retuning.
- Remotely controlled by RS232 interface.
- Input and output impedances: nominal value: 50 Ohms unbalanced.



**ACOM 2100**

- Frequency coverage: All amateur bands 1.8-54 MHz, extensions and/or changes on request.
- Power Output: 1500 W PEP or continuous carrier, no mode limit.
- RF Gain: 13.5 dB typically, frequency response less than 1 dB (50-85 W drive power for rated output).
- Primary Power: 100-264 V (100, 110, 120, 200, 210, 220, 230 & 240 V nominal taps, +10% -15% tol.), 50-60 Hz, single phase, 3500 VA at rated output.
- Input and Output impedances of nominal value: 50 Ohms unbalanced, UHF (SO239A) type connectors. Input circuit: broadband, VSWR less than 1.3:1, 1.8-54 MHz continuously (no tuning, no switching).
- Bypass path VSWR less than 1.1:1, 1.8-54 MHz continuously. Output (antenna) impedance matching capability: better than VSWR 3:1 or greater at reduced output levels. Number of Antenna Outputs: 3.



**ACOM 2000**



remote control unit

- RF output: 1500-2000 W keyed carrier or SSB – no time limit. Constant carrier modes 1500 W RF output – no time limit with aux cooling fan.
- Frequency coverage: All amateur bands 1.8-24.5 MHz. 28 Mhz only with modification.
- Band change / tune up: initial output matching process in less than 3 seconds.
- Tuning memories: Non-volatile for up to 10 antennas per frequency segment.
- Drive power: typically 50 W for 1500 W out.
- Input impedance: 50 ohms nominal. VSWR <1.5:1.
- Output tolerance: up to 3:1 VSWR (2:1 on 160 m) at full rated output.
- T / R and keying: vacuum relay: QSK capable.
- Tubes and circuit: 4CX800A/GU74b tetrodes (2); resistive grid, PI-L output with RF negative feedback.
- ALC: negative going, grid derived, -11 v max.
- Metering: comprehensive. Remote control unit provides flexible monitoring of all amplifier parameters. PC interface (RS-232) plus remote phone line interrogation feature.
- No controls on RF unit except ON / OFF. RF unit may be located up to 3 meters (20 m with optional cable) from RCU.

**HRO Price \$CALL**

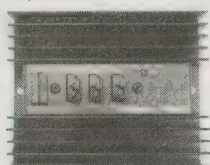


## Epic PWRgate

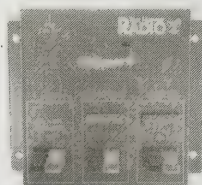
Epic PWRgate is a 12 V uninterruptible power system that can supply up to 40A continuously from either a power supply or a Lead Acid or Lithium battery with almost no voltage loss. It also charges the battery with its high performance charger. A separate solar panel input can be used to charge the battery directly from a solar panel with output less than 30 V.

#58404-1673 HRO Price \$189.95

## Super PWRgate PG40s



12 volt uninterruptible power switch that can supply up to 40 amperes continuously from either a power supply or a battery, and can also charge the battery with its high performance charger. Connected equipment will instantly switch to battery during a power blackout or power supply failure. #58403-1046 HRO Price \$139.95

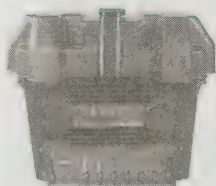


## ISOpr Plus

ISOprPlus is a solid-state switch using a high powered FET. It turns on when the car's alternator is running and turns off when it is not. The switching point is 13.5 volts. PWRguard output shut-off when voltage is out of range. Safely handles 40 amperes and is protected with a 40 ampere ATC blade fuse. Includes three sets of Powerpole® connectors. USB port for setting operating thresholds and for monitoring.

#58401-1044 HRO Price \$114.95

## DC-to-GO with 4007U & Super PWRgate PG40S



Super PWRgate provides easy-to-use portable DC Power. Takes Group 24 Size Battery (sold separately). It includes a RIGrunner 4007U (conveniently mounted to battery box) and Super PWRgate PG40S (conveniently mounted to battery box). Optimized for use with gelled & AGM type batteries, but will keep flooded lead acid and marine type batteries near full charge as well. Solid, durable aluminum construction includes mounting holes for convenient, secure use in mobile units. Uses Anderson Powerpole® connectors. #58513-1577 HRO Price \$259.95

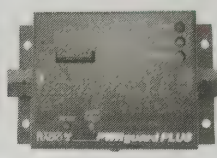
# DC POWER ACCESSORIES

## PWRcheck



Provides display of voltage, current flow in either direction, wattage and amp-hours. Measures 0 V to 60 V (less than 8 V requires USB power to PWRcheck), 40 A continuous load. Accurate to within +/- 10 mV, +/- 10 mA. Resolution: 10 mV, 10 mA. Backlit graphics LCD displays data in digital, analog and bar graph formats. USB computer interface for configuration and log data download. Programmable alarm conditions for over-current, over / under voltage, amp hours. Uses Powerpole® connectors. #58430-1286 HRO Price \$179.95

## PWRguard Plus



Automatic safety switch turns off if voltage exceeds 15 volts or drops below 11.0 volts. Turns back on when voltage is in safe operating range. Momentary voltage dips below 11.0 volts are ignored to prevent false tripping while transmitting. Rated for 40 A maximum while transmitting, 30 A continuous duty. Soft turn-on / turn-off solid state switch protects radio and reduces inrush current – no relay contact bounce! Remote on / off capability. Indicator LEDs and audible alarm notify user when safety switch turns power off. User may disable buzzer. Uses Anderson Powerpole® connectors #58402-1045 HRO Price \$114.95

## RIGrunner Power Distribution Panels

RIGRunners are the most convenient and safest way to connect all your 12 volt equipment. Uses Anderson Powerpole® – ARES, RACES, RSGB standard. Polarized and color keyed. 40 Amps total (8012 is 80 Amps total). Outlets fused with assorted ATC / ATO automotive fuses. Blown fuse LED indicators. For home and mobile installations. 6-foot input cable, #10 AWG with 1/4-inch terminals. (#8 AWG for 8012). "Complete" versions include Powerpole® packs. Alternate voltage versions of RIGRunners (24-48 VDC) are available! HRO Price \$CALL



### RIGrunner 4004U

40 amp, 4 outlets. 2 USB ports with 4 A charge. 6 pairs of 30 A

Powerpole® sets. #58315-1043 HRO Price \$84.95



### RIGrunner 4005

40 amp, 5 outlets. 6 pairs of 30 A Powerpole® sets. #58312-1039 HRO Price \$74.95



### RIGrunner 4005H

40 amp, 5 outlets horizontal. 6 pairs of 30 A

Powerpole® sets. #58312-1041 HRO Price \$72.95



### RIGrunner 4006U

delivers up to 40 amps total through 6

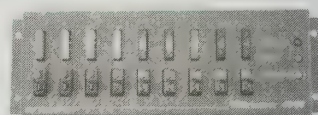
outlets and includes a dual USB socket for charging portable devices that need a USB socket for charging. Each port has an RFI protection capacitor. Each fuse has a blown LED. Each port uses high current Anderson Powerpole® connectors. #58320-1749 HRO Price \$104.95



### RIGrunner 4007U

40 amp continuous duty. 7 fused outlets.

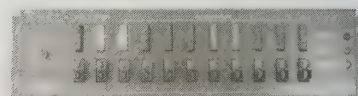
Automatic supply voltage and load current measurement shown on a 3 x 7 segment display. Automatic shut off on high (HVD) or low voltage condition (LVD). Intelligent USB port for charging iPhone, Android and other USB devices. #58313-1561 HRO Price \$169.95



RIGrunner 4008 40 amp, 8 outlets. LED and audible alarms. 6 pairs of 30 A Powerpole® sets. #58307-1035 HRO Price \$99.95



RIGrunner 4008H 40 amp, 8 outlets horizontal. 12 pairs of 30 A Powerpole® sets. #58307-1037 HRO Price \$94.95



RIGrunner 4010S+ 40 amp, 10 outlets. One master outlet and nine switched with LED and audible alarms. PWRguard shut off, internal USB port, remote access via USB port to turn on/off. Jumper for power saving mode. 12 pairs of 30 A Powerpole® sets. #58303-1601 HRO Price \$169.95



RIGrunner 8012C 80 amp, 12 outlets with LED & audible alarms. 12 pairs of 30 A Powerpole® sets. #58301-1028 HRO Price \$179.95

All of Astron's solid-state electronically regulated Power Supplies have fold-back current limiting to protect from excessive current, and a heavy duty heat sink. Output voltage: 13.8 VDC  $\pm$  0.05 volts. 220 V supplies available on special order at slightly higher price. AP models have Anderson Powerpole® connections

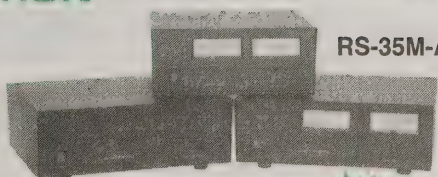
**RS-A Series** Standard power supply with on / off switch. Adjust voltage internally.

**SL Series** Slim Line design for low-profile looks.

## Power Supplies

Brand	Model	Cont. Duty 13.8 VDC	Intermit Duty	Height in	Width in	Depth in	Weight lbs	HRO Price
Alenco	DM-330MVT	30 A	32 A	2.8	6.1	8.07	3.5	CALL
	DM-430T	20 A	30 A	2.5	5	6.1	3	CALL
Astron	RS-4A	3 A	4 A	3.75	6.5	9	5	CALL
	RS-7A	5 A	7 A	3.75	6.5	9	9	CALL
	RS-10A	7.5 A	10 A	4	7.5	10.75	11	CALL
	RS-12A	9 A	12 A	4.5	8	9	13	CALL
	RS-20A	16 A	20 A	5	9	10.5	18	CALL
	RS-35A	25 A	35 A	5	11	11	27	CALL
	RS-35A-AP*	25 A	35 A	5	11	11	27	CALL
	RS-50A	37 A	50 A	6	13.75	11	46	CALL
	RS-70A	57 A	70 A	6	13.75	13.75	48	CALL
	RS-12M	9 A	12 A	4.5	8	9	13	CALL
	RS-20M-AP*	16 A	20 A	5	9	10.5	18	CALL
	RS-35M-AP*	25 A	35 A	5	11	11	27	CALL
	RS-50M	37 A	50 A	6	13.75	11	46	CALL
	RS-70M	57 A	70 A	6	13.75	12.12	48	CALL
	RM-50A	37 A	50 A	5.25	19	12.5	50	CALL
	RM-60A	50 A	55 A	7	19	12.5	63	CALL
	RM-35M	25 A	35 A	5.25	19	12.5	38	CALL
	RM-50M	37 A	50 A	5.25	19	12.5	50	CALL
	RM-60M	50 A	55 A	7	19	12.5	63	CALL
	VS-20M	16 A	20 A	5	9	10.5	20	CALL
	VS-35M	25 A	35 A	5	11	11	29	CALL
	VS-50M	37 A	50 A	6	13.75	11	46	CALL
	SL-11A	7 A	11 A	2.75	7.62	9.95	11	CALL
	SL-15R	12 A	15 A	2.75	7.62	9.95	14	CALL
	SS-10	7 A	10 A	2.375	6	9	3.2	CALL
	SS-12	10 A	12 A	2.375	6	9	3.4	CALL
	SS-18	15 A	18 A	2.375	6	9	3.6	CALL
	SS-25	20 A	25 A	2.875	7	9.375	4.2	CALL
	SS-30	25 A	30 A	3.75	7	9.625	5	CALL
	SS-50	40 A	50 A	2.875	7	9.375	5	CALL
Diamond	GZV4000	40 A	42 A	4.5	8.25	13	8	CALL
	GZV6000	60 A		4.5	8.25	13	8	CALL
Daiwa	SS-330W	30 A	33 A	4	5	11	4.8	CALL
	SS-505	50 A	55 A	4.3	8.5	11	8.25	CALL
Kemwood	KPS-15	23 A	24 A	2.2	7	8.25	4	CALL
	PS-60	22.5 A	22.5 A	3.75	6.83	8.9	5.5	CALL
Powerwerx	SS-30DV	25 A	30 A	2.5	5	6.1	3	CALL
	SPS-30DM	25 A	28 A	2.5	5	6.1	3.7	CALL
Samlex	SEC1212	10 A	12 A	2.2	7	8.25	3	CALL
	SEC1223	23 A	24 A	2.2	7	8.25	4	CALL
	SEC1223BMT†	23 A	24 A	2.2	7	8.25	4	CALL
	SEC1235M	30 A	35 A	2.4	7.28	8.19	4.5	CALL
Yasuo	FP-1023	23 A	24 A	2.2	7	8.25	4	CALL
	FP-1030A	25 A	30 A	9.8	5.9	9.5	20.9	CALL

\* AP models now with Anderson Powerpoles® † Contains a backup battery module  
(220 volt versions of some models available at additional cost by special order. Contact HRO for details.)



RS-35M-AP



**RS-M-AP Series** Power supplies with front meters. One is for voltage and the other current. Now with Anderson Powerpoles®.

**SS Series** High efficiency switching supplies specially filtered for use with communications equipment for all frequencies including HF. Heavy duty design, low profile, light weight and EMI filter.

**VS-M Series** Variable power supplies with separate volt and amp meters. Adjustable output: 2-15 volts.

**RM Series** 19" x 5 1/4" rack-mount power supplies available with or without meters and may be variable. The RM-60 comes with or without meters.

## Switching Supplies



Daiwa switching power supplies are one-third the weight and one-half the size of conventional supplies. Daiwa models can be used for DC motors that

require peak starting currents and will accept input voltage from 90-130 V. Switching supplies can create pulse noise, but Daiwa engineers have isolated any noise and moved it out of the amateur bands creating a super quiet power supply.

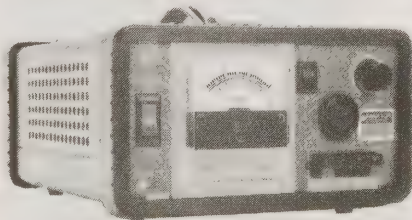
Both models below have adjustable voltage 5-15 V., a built-in automatic cooling fan, a carry handle for portability, and are short-circuit protected.



SS-330W 30 amp

- Dual meters, amp and voltage.
- Ripple voltage: less than 10 mV.
- 30 amps continuous current (33 peak).
- Weight: ONLY 4 lbs 14 ozs.
- Dimensions: 5" x 4" x 11" (approx).

HRO Price \$169.95



SS-505 50 amp

- 50 amps continuous current (55 peak).
- 50 amps available at all output voltages.
- Binding posts on back, cigarette-lighter socket, spring loaded connectors on front.
- Voltage fluctuation: less than 1.5%.
- Dual purpose meter – amp and voltage.
- Weight: ONLY 8 lbs 4 ozs.
- Dimensions: 8.5" x 4.3" x 11" (approx).
- Ripple voltage: less than 5 mV.

HRO Price \$349.95

Call for Quotes

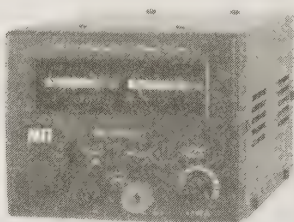
**MFJ**

# SWITCHING POWER SUPPLIES



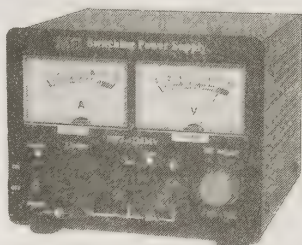
## MFJ-4128

Switching power supply delivers 28 A surge, 25 A continuous at 13.8 VDC. Selectable AC input voltage 85-135 and 170-260 VAC. 5-way binding posts, cigarette lighter socket, fan "on" LED indicator. 7 W x 2.25 H x 7.5 D and 4 lbs.



## MFJ-4215MV

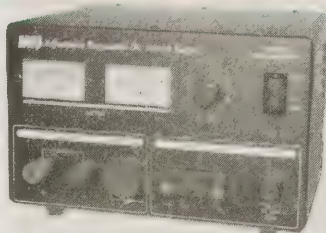
15 amp switching power supply, 15A surge and 13A continuous. Variable 4-16 VDC with 1% voltage regulation. Backlighted volt / amp meters. 5-way binding posts for output. 5 W x 3.75 H x 7 D at 2.9 lbs.



## MFJ-4225MV

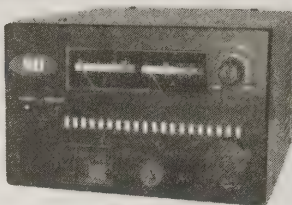
Similar to MFJ-4125, but adds large 3-inch amp, volt meters and cigarette lighter plug. 5.25 W x 4.5 H x 6 D inches. Weighs 3.7 pounds.

## Transformer Supply



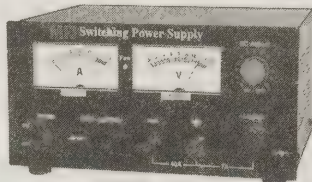
## MFJ-4035MV

19.2 lb transformer delivers 35 A max, 30 A continuous. 1-14 VDC out, 110 VAC in. Highly regulated, 1% load regulation. 5-way binding posts, quick connects. It is a transformer supply, not a switching.



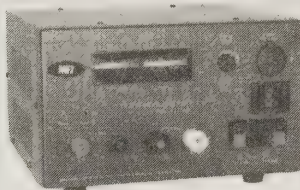
## MFJ-4235MV

Switching power supply gives 35 A surge, 30 A continuous. 4-16 VDC with 1% voltage regulation. AC input 90-125 or 200-240V. 7 W x 4.25 H x 8.75 D and 4 lbs.



## MFJ-4245MV

Similar to MFJ-4225 MV but handles 45 amps surge and 40 amps continuous. 7.5 W x 4.75 H x 9 D inches. Weighs just 5.5 pounds.



## MFJ-4275MV

75 amp switching power supply is great for powering your Ameritron ALS-500M amplifier. 75 A maximum and 70 A continuous. 110 / 220 VAC switchable. Highly regulated with load regulation better than 1%. Ripple voltage is less than 12 mV peak-to-peak at rated load. No RF hash. Short-circuit, overload, and over-temperature protection systems. Front panel adjustable voltage 4-16 VDC. Battery charging feature provides charging current of 20 A continuous, 30 mA trickle charge. 9-3/4 W x 5-1/2 H x 9-1/2 D inches.

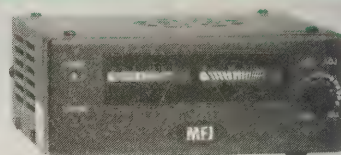
## Super Tiny Supply



## MFJ-4115

Ultra-compact 15 amp switching power supply weighs just 1-1/2 pounds and is 3-3/4 W x 2-1/4 H x 7-3/4 D inches. Has overvoltage and over current protection. 17 A surge, 15 A continuous.

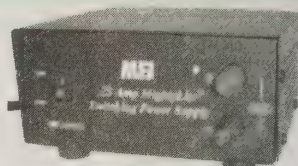
## Adjustable DC Output



## MFJ-4218MV

Ham radio's only adjustable 0-24 VDC output switching power supply! 18 A at 13.8 VDC, 9 A at 24 VDC. Backlighted volt / amp meters, 5-way binding posts. LED load fault indicator. 6 W x 2.25 H x 6.75 D and 2.2 lbs.

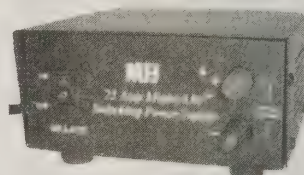
## Available with PowerPole Connectors



## MightyLite™

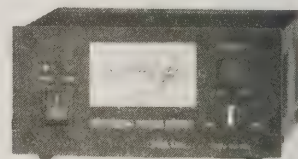
## MFJ-4125

Switching Power Supply. 25 amps surge, 22 amps continuous. No RF hash! Low ripple, highly regulated. Great review by QST magazine. Over-voltage and over-current protection circuits. Switchable AC input voltage, works from 85 to 135 VAC or 170 to 260 VAC. Replaceable fuse. Tiny 5.5 W x 2.5 H x 5.75 D inches. Weighs just 3.5 lbs.



## MFJ-4125P

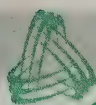
This version available with 2 pair of PowerPoles® and 5-way binding posts on front panel, and quick connects on back



## MFJ-4230MV

30 amp switching power supply with switchable amp / volt meter. Super compact 5 W x 2-1/2 H x 6 D inches. 120 / 240 VAC switchable. Gives 25 amps continuous or 30 amps surge at 13.8 VDC. Front panel voltage adjustable 4 to 16 VDC.

MFJ-4230MVP is similar to MFJ-4230MV but adds a pair of PowerPoles™ on back.

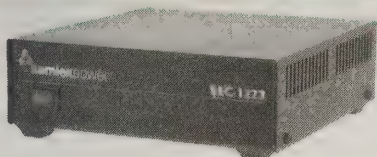


# samlexamerica

**Samlex is THE power supply choice for radio manufacturers around the world. On the market for more than 20 years, these compact switching power supplies offer reliable power at a price consumers can afford.**

**ALL SAMLEX POWER SUPPLIES CARRY A 3-YEAR WARRANTY**

## For Base Stations



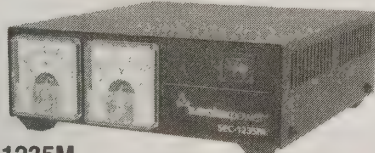
**SEC-1223 & SEC-1212**

The perfect lightweight companion for 100 Watt transceivers. Input 100-130 VAC; Output: 13.8 VDC @ 23 Amps; UL approved. Also works on 200-240 VAC input with a simple jumper change. Safety features: Current limiting; Short circuit protection; Overvoltage protection; Quiet temperature controlled cooling fan. The SEC-1212 has the same form factor as the SEC-1223 with output of 13.8VDC @ 12 amps. • 3 year warranty - "no questions asked."

• Dim 7" w x 2.1" h x 7.1" d; 4.5 lbs.

**HRO Price SEC-1223 \$129.95**

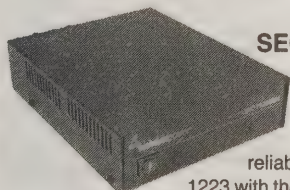
**HRO Price SEC-1212 \$94.95**



**SEC-1235M**

This unit includes built-in volt and amp meters. 100-130 VAC, 13.8 VDC.

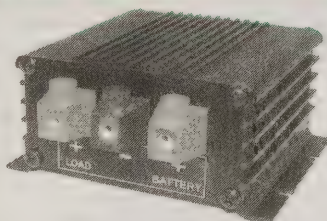
- Best power supply value available.
- Advanced switch-mode technology.
- Reliable power at minimum weight & size.
- Circuit innovations minimize output voltage ripple and RFI.
- Input voltage can be set at 120 VAC or 240 VAC (internal jumper setting).
- Front panel ammeter and voltmeter.
- Detachable power supply cord.
- UL listed to both USA & Canadian safety standards; FCC compliant **HRO Price \$139.95**



**SEC-1223BBM**

Samlex has combined the reliability of the SEC-1223 with the reassurance of the BBM-1225 battery backup module. The SEC-1223 23-amp unit automatically provides uninterrupted DC power from an external backup battery to your critical load in the event of an AC power outage. Once AC power is restored, the SEC-1223BBM will continue to seamlessly supply DC power to the load while providing a current-limited charge to the backup battery. Input: 100 - 130 VAC. Output: 13.8 VDC. **HRO Price \$149.95**

## Battery Backup



**BBM-1225 25 Amp**

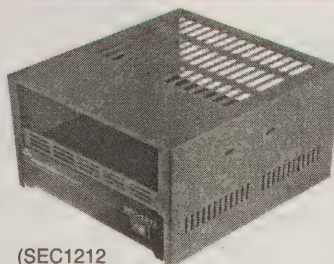
**BBM-12100 100 Amp**

- Uninterrupted DC power in association with a power supply and battery.
- Instantaneous transfer of load between power supply and battery.
- Pre-set for 12 V power supply.
- Minor modifications for 24 V power supply.
- Use with any Samlex or other 12 V or 24 V DC power supply.

**HRO Price BBM-1225 \$50.95**

**HRO Price BBM-12100 \$134.95**

## Radio Cabinets



(SEC1212 shown)

### Base Station Radio Cabinets

Integrate your mobile radio with any Samlex desktop switching power supply to create an attractive and functional desktop base station unit. Cabinets are specifically designed for use with specific mobile radio models. **HRO Price \$43.95**

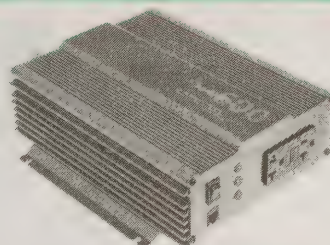
**SEC 1212** (radio not included)  
**Samlex 12250** for Kenwood TM-281A.

**Samlex 12200** for Icom ID-880H-05, IC-2820H.

**Samlex 12333** for Yaesu FT-2900A.

# SOLAR POWER

## DC to AC Inverters



**PST-150-12 150 Watt**

**PST-300-12 300 Watt**

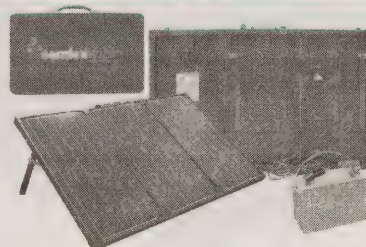
**PST-600-12 600 Watt**

**HRO Prices - CALL**

The PST series provides clean pure sine wave power. PST's commercial grade design is suitable for heavy duty loads, long periods of continuous operation and for reliable AC power.

- Quiet Operation with temperature controlled fan reduces energy consumption.
- Extremely low interference with other devices. Pre-set for 12 V power supply. GFCI protected outlets.
- Suitable for heavy duty loads, long periods of continuous operation & for emergency back up.
- Wide operating DC input range compatible with new high voltage alternators.
- Universal Protection Circuit: low voltage, over voltage, over temp, over load and short circuit.
- Safety certified to UL & CSA standards, FCC compliant.
- 2 year warranty.

## Solar Power



### Portable Kits

**MSK-90 90 Watt**

**MSK-135 135 Watt**

Whether you need to charge your 12V batteries during field emergencies or to get extended remote run-times for your equipment, always have the Samlex MSK Portable Solar Charging kit at your ready. Available in 90 and 135 Watt models, these MSK kits include a built-in, three-stage 10 Amp charge controller to protect batteries and prevent overcharging. Kits fold easily and compactly in a protective carry case for transport and storage and come with pre-wired battery clamps on a 16' cable. 2 year warranty.

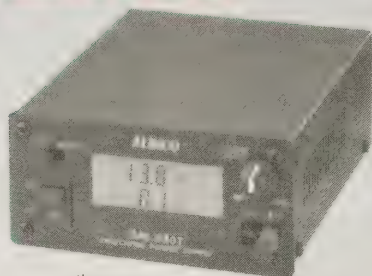
**HRO Price MSK-90 CALL**

**HRO Price MSK-135 CALL**

# POWER SUPPLIES

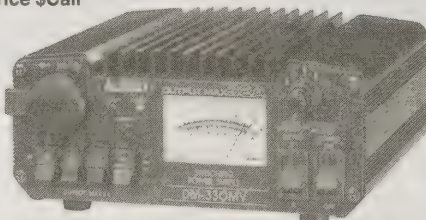


## DM-430T Switching Power Supply



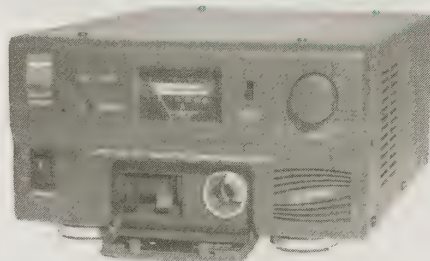
Compact, lightweight design features 9-15 VDC variable output up to 20 amps continuous and 30 amps peak. The noise offset circuit lets you move any switching noise to another frequency. Features large illuminated digital Volt / Amp meter, rear panel (30 A peak) binding posts, front panel quick terminals (5 A), banana poles for E, Anderson power poles for T, short circuit, over temperature, and current limiting protection. Front panel adjustable. **HRO Price \$Call**

## DM-330MVT



Super compact, lightweight power supply is great for portable operations. Provides 32 A peak, 30A continuous. Variable output 5-15 VDC. Preset voltage function. Patent pending noise offset circuit removes pulse noise. Short circuit protection. Convenient front panel connections. Cigarette plug socket. **HRO Price \$Call**

**DIAMOND**



## Switching Mode DC Power Supply

## GZV4000 40 Amp

The GZV4000 switching mode DC power supply has a 40 amp continuous rating at 100% duty cycle. The supply has variable voltage from 5-15 VDC using a voltage control knob with a center detent at 13.5 VDC. There is overload and short circuit protection with current feedback at approximately 42 amps and temperature protection with a variable speed fan. An AC line filter gives EMI protection. The meter selector allows monitoring of voltage and current. Power and overload indicators included. Front panel DC terminals, a cigarette lighter jack,

and an internal 8 ohm speaker. Operates on 120 VAC  $\pm 20\%$ , 50-60 Hz. Ripple and noise is less than 8 mV rms. 240 VAC models also available for GZV4000. **HRO Price: \$169.95**



## GZV6000 60 Amp

60 amp version. 100V-240V  
**HRO Price: \$369.95**

# BATTERIES



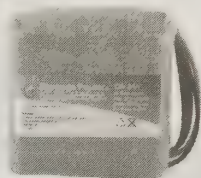
**BIOENNO  
POWER**

## Lithium Iron Phosphate Batteries

Bioenno Power's Lithium Iron Phosphate batteries are designed with ham radio applications in mind, and provide several key advantages:

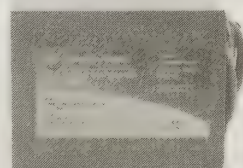
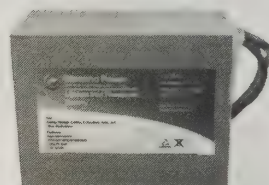
- Based on advanced Lithium Iron Phosphate (LiFePO<sub>4</sub>) battery chemistry.
- Compatible with every brand (ICOM, Kenwood, Yaesu, Elecraft, etc.).
- Built-in protection-circuit-modules (PCM), which are "micro-computers" that internally balance cells and provide protection from overcharging, over-discharging, over-current, and short circuiting.
- 50% to 70% lighter than SLA (sealed lead acid) batteries.
- Service life of 2000+ charge cycles or 5-10+ years, with a shelf life that far exceeds the service life of many other batteries.
- Powerpole® connectors that are already attached and can connect directly to radios.
- Thermally and chemically stable.
- Dependable and reliable.

Based in Santa Ana, California, Bioenno Power products are currently used in a variety of applications and industries including ham radio, surveillance, avionics, scientific equipment, communications, audio/visual equipment, e-bikes/e-scooters, etc. with capacities ranging from 3 Ah up to 200 Ah.



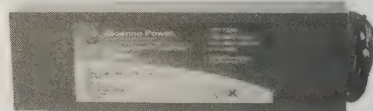
## Bioenno Power BLF-1203W 12 Volt - 3Ah LFP Battery (PVC, BLF-1203W) - LiFePO<sub>4</sub> **HRO Discount Price: \$49.95**

## Bioenno Power BLF-1206W/A 12V, 6Ah LFP Battery (PVC, BLF-1206W/A) - LiFePO<sub>4</sub> **HRO Discount Price: \$79.95**

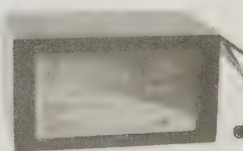
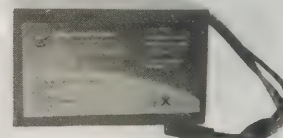


## Bioenno Power BLF-1209W/A 12V, 9Ah LFP Battery (PVC, BLF-1209W/A) - LiFePO<sub>4</sub> **HRO Discount Price: \$99.95**

## Bioenno Power BLF-1212W/A 12V, 12Ah LFP Battery (PVC, BLF-1212W/A) - LiFePO<sub>4</sub> **HRO Discount Price: \$124.95**



## Bioenno Power BLF-1215W/A 12V, 15Ah LFP Battery (PVC, BLF-1215W/A) - LiFePO<sub>4</sub> **HRO Discount Price: \$149.95**



## Bioenno Power BLF-1220W/A 12V, 20Ah LFP Battery (PVC, BLF-1220W/A) - LiFePO<sub>4</sub> **HRO Discount Price: \$192.95**

Please note that these batteries should be charged using a LiFePO<sub>4</sub> compatible charger, and not with a charger for SLA batteries.

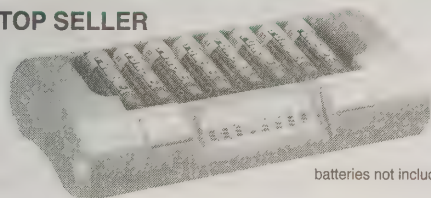
# CABLE CONNECTORS

## NIMH Rechargeable Batteries

**POWEREX**

More than 25 Years Expert in  
Rechargeable Batteries and Chargers

### TOP SELLER



batteries not included

### Powerex MH-C800S

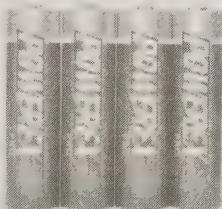
HRO Price \$39.95

- 8-Cell Smart Charger for 8 AA/AAA NiMH Batteries.
- Charges batteries in approximately 1-2 hours.
- Worldwide travel friendly.

### Powerex MH-RAA 4 PRO

HRO Price \$11.95

- Save up to \$1,500 over the lifespan of one battery.
- Powerex PRO AA 2700 mAh 4-pack.
- Low self-discharge batteries, optimized for high drain devices. 1.2 Volts (Vdc), 2700 mAh capacity.



TOP RATED  
battery

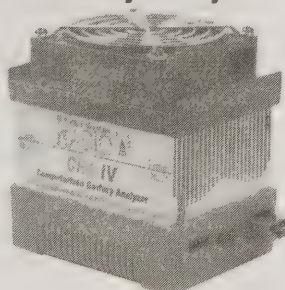
## Connectors

Model	Description	HRO Price
BNC-44	BNC to UHF Adapter	\$5.99
N-31	N to UHF Adapter	\$9.99
PL-250ST	PL-250	\$2.69
N-TGS	Type N Male	\$6.99
UHF-08	4 hole 50-239 Chassis Connector	\$4.99
UHF-10	Double Male UHF	\$5.99
UHF-11	UHF Barrel	\$4.99
UG-383-4	Long UHF-UHF Barrel	\$16.95
UHF-15-DGN	RT. Angle Teflon, Gold Pin	\$7.95
UHF-13	UHF "T"	\$5.99
UHF-19	BNC to UHF Adapter	\$6.99
UHF-18	UHF to N Adpter	\$8.99

## Battery Analyzer

WEST MOUNTAIN  
**RADIO**

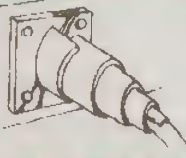
### Computerized Battery Analyzer



### CBA IV

The CBA is much more than a simple battery voltage tester or a battery load tester. The CBA will test virtually any type or size of battery, any chemistry, any number of cells up to 55 volts. For the first time and for a reasonable price, anyone can do scientific tests of their batteries by letting their computer do all the work. The CBA is capable of higher test rates than other testers: up to 40 amps or 150 Watts, whichever is higher. It not only tests the total amount of energy stored in a battery (capacity in amp-hrs), but it graphically displays and charts voltage versus amphotours. #58250-1014 HRO Price \$174.95

## Coax-Seal



### Coax-Seal



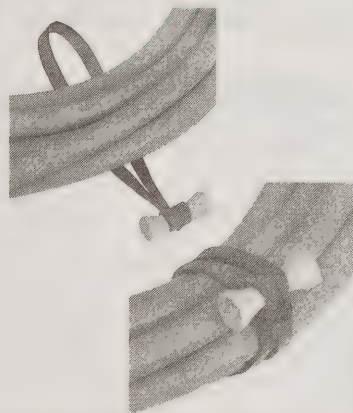
Coax-Seal will seal all types of coax fittings, baluns, antenna parts and connectors of any shape. Adheres to most surfaces. Wrap Coax-Seal around the object you want to protect and then mold it into shape. Keeps moisture out of the coax fitting on antenna feed lines. Need to make a change? Just remove it and start over. HRO Price: \$3.99 / roll

## Cable Ties

It's a Wrap!

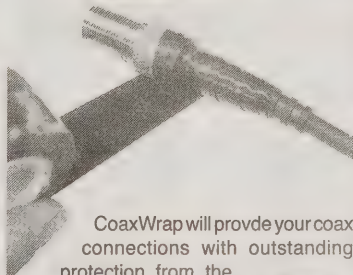
**BongoTies**

Handy Ties for Cables  
and Other Unruly Items



BongoTies have hundreds of uses around the office, home, garage, studio, and industry. Stop and look at all of those messy wires behind your computer right now! Each pack has 10 BongoTies, so this offer is for a total of 40 BongoTies. Sturdy reclosable bags with zip-lock tops. BongoTies are approx. 5 in. in length, and stretch to approx. 18-20 in. (Not for outdoor use.) HRO Price \$6.99 for a bag of 10

## CoaxWrap



CoaxWrap will provide your coax connections with outstanding protection from the weather. Just wrap the connection with the convenient roll. When you need access to the connection, the wrap removes easily. Available in red, white, blue, clear, and black. Price per roll \$6.40

# CABLE ASSEMBLIES / CONNECTORS

## Cable Assemblies

### CABLE X-PERTS

#### Ready-Made Coax Cable Assemblies

Model	Connector Both Ends	Burial	UV Resistant	Shields	Attenuation dB @ 100 Feet	Best Frequencies
CXP 1318FC	PL259	Yes	Yes	2 (100% bonded foil + 95% TC Braid V/F 84%)	50 MHz 1.1 150MHz 1.9 450MHz 3.3	50-450 MHz
CXP 008C	PL259	No	Yes	1 (95% BC Braid) V/F 78%	10 MHz 0.51 30MHz 0.9 50MHz 1.2	1-50 MHz
CXP 1318FN	"N"	Yes	Yes	2 (100% bonded foil + 95% TC Braid V/F 84%)	150MHz 1.9 450MHz 3.3	150 MHz and Higher
CXP 08XC	PL259	No	Yes	1 (95% BC Braid) V/F 78%	10 MHz 0.98 30MHz 2.0	1 - 30 MHz
CXP 213C	PL259	Yes	Yes	1 (97% BC Braid) V/F 66%	10 MHz 0.62 30MHz 1.2	1 - 30 MHz (High Power)

#### RG213/U w/PL259

Part Number	Length (feet)	HRO Price
CXP213C100	100	\$104.95
CXP213C50	50	\$59.95
CXP213C8	6	\$21.95
CXP213C3	3	\$19.95

#### RG8/U Foam w/PL259

CXP008C100	100	\$89.95
CXP008C50	50	\$54.95
CXP008C25	25	\$34.95
CXP008C12	12	\$21.95
CXP008C8	6	\$16.95
CXP008C3	3	\$15.95

#### RG8X-Mini w/PL259

CXP08XC100	100	\$44.95
CXP08XC75	75	\$34.95
CXP08XC50	50	\$29.95
CXP08XC25	25	\$24.95
CXP08XC18	18	\$21.95
CXP08XC8	6	\$18.95
CXP08XC3	3	\$16.95

#### 9913-type Flexible w/N-Connector

Part Number	Length (feet)	HRO Price
CXP1318FN150	150	\$169.95
CXP1318FN100	100	\$119.95
CXP1318FN50	50	\$59.95
CXP1318FN25	25	\$44.95
CXP1318FN8	6	\$26.95
CXP1318FN3	3	\$20.95

#### 9913-type Flexible w/UHF Connectors

CXP1318FC100	100	\$119.95
CXP1318FC50	50	\$64.95
CXP1318FC8	6	\$21.95
CXP1318FC3	3	\$18.95

#### Tinned Copper Ground Braid

235	1" wide	\$1.89 / foot
2332	1/2" wide	\$0.89 / foot
235RT-5	1" 5' long	\$14.95
235RT-10	1" 10' long	\$19.95
2332RT-5	1/2" 5' long	\$12.95
2332RT-10	1/2" 10' long	\$15.95

\* w/Ring Terminals

Visit HRO on the Web @ [hamradio.com](http://hamradio.com)  
for the Latest in Manufacturer's Specials

## Cable

### TIMES

Call for Low Discount Prices  
on Times Cable

#### LMR-200 - RG58 type

This is a standard RG58 'type' outdoor cable that is ideal for jumper assemblies, short antenna feeder runs, or any application requiring an easily routed, low loss RF cable. It has a solid BC inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 83%. It will withstand 1000VDC, a peak power of 2.5 kW, and shielding effectiveness is >90 dB.

#### LMR-240 - RG8X type

This RG8X 'type' outdoor cable has a solid BC inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 84%. It will withstand 1500 VDC, a peak power of 5.6 kW, and shielding effectiveness is >90 dB.

#### LMR-400 - RG8 / RG213 type

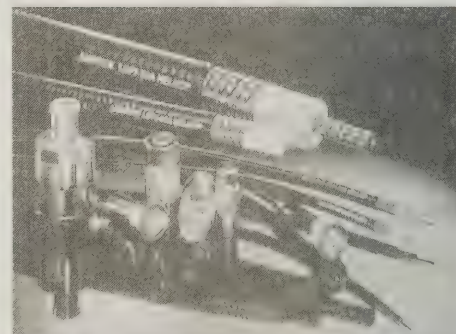
This is a standard RG8/RG213 'type' outdoor cable that has a solid BCCA inner conductor, foam polyethylene dielectric, aluminum tape outer conductor, a tinned copper overall braid and black polyethylene jacket. The velocity factor is 85%. It will withstand 2500 VDC, a peak power of 16 kW, and shielding effectiveness is >90 dB.

#### LMR-400-UltraFlex

Similar specs as LMR-400 with TPE jacket.

## Coax & Connectors

**ANDREW®**



Andrew coax and all the matching connectors you will need are available as a special order drop shipment. Contact your nearest HRO store for complete details.

Model #	Cable Type	Diameter Inches	\$/100 feet*
AVA5-50FX	Foam Dielectric	7/8 inch	CALL
FSJ4-50B	Superflex	1/2 inch	CALL

\*Plus Shipping

# COAX / ROTATOR CABLE

## ABR Industries

Complete Product attenuation information on Page 70

We have RF cable available from

**ABR Industries**



**ANDREW**

**BELDEN**

**CABLE X-PERTS**

**DAVIS RF**

**JSC**

**TIMES  
MICROWAVE**

### Coax

Purchase coax in any length up to 500 feet.

#### RG8 / U

Standard RG8 / U, #13 stranded copper center conductor, cellular polyethylene insulation, 97% bare copper shield, PVC jacket, 50 ohm impedance, 78% velocity factor and 1.8 dB loss per 100' at 100 MHz. The most popular cable for HF/VHF/UHF. Use when long cable runs are not required.

#### RG213 / U

RG-213 / U coax, #13 stranded copper center conductor, solid polyethylene insulation, 97% bare copper shield, non-contaminating PVC jacket, 50 ohm impedance, 66% velocity factor and 2.2 dB loss per 100' at 100 MHz. This RG-8 type cable is best for HF. It may be buried.

#### 9913F-7

9913F-7 is RG8/U-type coax, #9.5 stranded copper conductor, foam polyethylene insulation, 100% foil plus 88% braid shield, PVC jacket, 50 ohm impedance, 84% velocity factor and 1.4 dB loss per 100' at 100 MHz. The best cable for VHF and UHF applications.

#### RG8X

RG8X is small diameter coax, #16 stranded copper center conductor, cellular polyethylene insulation, 95% bare copper shield, PVC jacket, 50 ohm impedance, 78% velocity factor and 3.7 dB loss per 100' at 100 MHz. Good for short VHF runs and most HF uses.

### Rotator Cable

**8 wire, standard duty** - 8 wire cable using six #22 and two #18 tinned copper conductors. PVC insulation.

**8 wire, heavy duty** - 8 wire cable using 6 - #18 and 2 - #16 tinned copper conductors. PVC insulation; chrome PVC jacket.

#### When Ordering Cable

Please order in multiples of 50 feet. Continuous length spools up to 500 feet are available. Call for quotes.

*ABR Industries manufactures coax with a non-contaminating, ultra-violet resistant, and direct burial jacket. Cables are American Made and are fully tested and ready to use.*

### Direct Bury Cable

**218XATC** - lightweight for mobile, dipole antennas, or jumpers between equipment in tight places. RG8X (LMR@240 type) with PL-259 connectors and adhesive lined HST at both ends. Jacket is UV resistant and direct burial.

RG8X-Direct Bury w/PL259		
218XATC-PL-1.5	1.5	\$18.95
218XATC-PL-3	3	\$18.95
218XATC-PL-6	6	\$19.95
218XATC-PL-9	9	\$21.95
218XATC-PL-12	12	\$24.95
218XATC-PL-18	18	\$28.95
218XATC-PL-25	25	\$29.95
218XATC-PL-30	30	\$32.95
218XATC-PL-40	40	\$35.95
218XATC-PL-50	50	\$37.95
218XATC-PL-75	75	\$44.95
218XATC-PL-100	100	\$54.95
218XATC-PL-125	125	\$69.95
218XATC-PL-150	150	\$79.95
218XATC-PL-250	250	\$129.95

### HT Jumpers

ABR Industries now supplies HT jumpers in various short lengths of RG316/U Teflon® .100" OD.

These can be had in 3, 6, 9, 12, and 15 foot lengths of SMA male to SMA female, or 3 and 6 foot lengths of SMA male at both ends, or SMA male to PL259 or SO239.

### Ground Braid

Also available are various lengths of 1-inch or ½-inch Tinned Copper Flat Ground Braid with ¼-inch stud ring terminals

And there are a few different lengths of ½-inch tinned copper with Nickel Grommets at 4" spacing for easy attachment to a vehicle body or truck bed to create a "ground plane" or an option as a buss-bar in the shack.

### Direct Bury Cable

**2213A** - UV resistant, direct bury. RG213/U Mil-Spec w/PL259 connectors and Adhesive lined HST at both ends. Solid polyethylene dielectric, high power, bands below 30MHz with amplifiers.

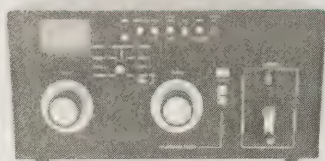
RG213/U w/PL259		
Part Number	Length (feet)	HRO Price
2213A-PL-1.5	1.5	\$18.95
2213A-PL-3	3	\$21.95
2213A-PL-6	6	\$23.95
2213A-PL-18	18	\$30.95
2213A-PL-25	25	\$44.95
2213A-PL-50	50	\$69.95
2213A-PL-75	75	\$96.95
2213A-PL-100	100	\$124.95
2213A-PL-150	150	\$179.95

**25400F** - (LMR@ 400UF) UV resistant, direct-bury, for frequencies above 144 MHz. PL-259 connectors and adhesive lined HST at both ends.

RG8/U Direct Bury w/PL259		
25400F-PL-1.5	1.5	\$18.95
25400F-PL-3	3	\$21.95
25400F-PL-6	6	\$24.95
25400F-PL-12	12	\$27.95
25400F-PL-18	18	\$31.95
25400F-PL-25	25	\$44.95
25400F-PL-50	50	\$69.95
25400F-PL-75	75	\$97.95
25400F-PL-100	100	\$119.95
25400F-PL-150	150	\$174.95

**25400F** - (LMR@ 400UF) UV resistant, direct bury, for frequencies above 144 MHz. N male connectors and adhesive lined HST both ends.

RG8/U Direct Bury w/N Male		
25400F-NM-3	3	\$24.95
25400F-NM-6	6	\$29.95
25400F-NM-12	12	\$35.95
25400F-NM-18	18	\$39.95
25400F-NM-25	25	\$49.95
25400F-NM-35	35	\$57.95
25400F-NM-50	50	\$78.95
25400F-NM-75	75	\$106.95
25400F-NM-100	100	\$129.95
25400F-NM-150	150	\$184.95

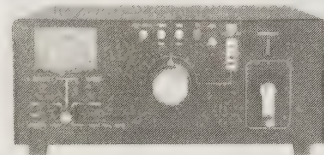


## AT-5K Antenna Tuner

The AT5K takes power handling to the next level over the AT4K, coming in with a rating of 3500 Watts single tone continuous performance with low losses and wide Z range.

Palstar's AT5K, like its AT4K little brother, has a T-matching network utilizing a 1:1 unbalanced-to-balanced transformer at the INPUT of the network.

- 3500 Watts single tone, high efficiency, low tuner losses and wide Z range.
- 160m to 15m with limited Z range on 10m.
- Balanced output with high power 5 kW Teflon® wire balun at the input of tuner circuit.
- Ferrite 1:1 input balun.
- Custom, large plate variable capacitors (600pF @ 6 kV).
- 10 Amp 7 kV CERAMIC 3.25" body roller inductor (35  $\mu$ H) wound with 10 ga. plated solid copper wire.
- Six-position switchable antenna input switch with 7 kV, 10 Amp contacts.
- Peak and peak hold dual cross-needle metering (1-2 sec hold) with backlighting.
- Fan cooling for extended 100% duty cycle operation.



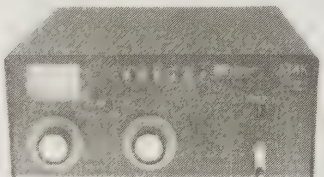
## AT2KD Antenna Tuner

The AT1500DT and the AT1KP have been combined into a new 2kW tuner. The AT2K has all our features such as: peak and peak-hold; a resonant free roller system to operate from 6m to 160m continuously; new LED lit meter system; and a new compact size.

- Power rating 2000 Watts PEP.
- Frequency tuning 160m to 6m.
- Impedance matching range 20 ohms to 1200 ohms.
- Easy and quick tuning with only two controls.
- Palstar designed ceramic body roller inductor.
- 6 position mode switch for multiple antennas.
- Meter power range 0-300 Watts / 0-3000 Watts.
- Active peak and peak hold dual cross-needle metering (1-2 sec hold) with LED backlighting.
- Differential capacitor tuning with 2 stators and 1 rotor (420 pF - 13pF - 420pF @ 5kV).
- High power ferrite 1:1 or 4:1 current balun (optional) externally installed.
- Size: 12 1/2" x 5 1/2" x 16".
- Weight: 12 lbs.

**Optional 1:1 or 4:1 Current Balun available.**

## AT-2K Antenna Tuner

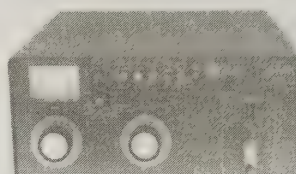


The smaller roller inductor allows the AT2K to tune 6 meters, while a relay-switched toroid adds the extra inductance needed for 160 meter coverage.

Newly designed capacitors feature lower minimum capacitance for improved high band performance, while maximum capacitance has been increased to 400 pF for better low band performance.

- Power rating 2000 Watts PEP.
- Impedance range 20 to 1500 ohm 160m to 10m (assuming resistive load).
- Low minimum custom variable capacitors (15pF to 400pF at 4.5 kV).
- 10  $\mu$ H relay-switched add-on inductor for 160 meters, roller inductor with turns counter.
- 18  $\mu$ H 5 kV ceramic body roller inductor with turns counter.
- Silver plated inductor wheel shaft and contact wheel.
- Active peak / peak hold cross-needle metering w/ backlighting.
- 6 position ceramic wafer antenna selector switch.

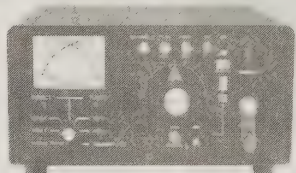
**Optional 1:1 or 4:1 Current Balun available.**



## AT4K Antenna Tuner

The AT4K has a power rating of 2500 Watts single tone continuous.

- Unbalanced / balanced output (switch activated on front panel) with high power balun at the input of tuner circuit.
- T match circuit: impedance matching range 8-2000 ohms.
- Custom large value (460pf) variable capacitors at 6 kV.
- Switchable antenna inputs.
- 10 amp edge-wound silver plated ceramic body roller inductors crank handle driven.
- Ferrite 1:1 input balun.
- Peak / peak hold dual cross-needle metering (1-2 sec hold) with backlight.
- Size: 15" x 7" x 16" deep.
- Weight: 20 lbs.



## AT-500 Antenna Tuner

Covering 160 to 6 meters, the AT-500 has a differential tuning capacitor with 2 stators and 1 rotor, a precision ceramic body roller inductor, and a 4:1 ferrite current balun for balanced line feeds.

- Power rating: 600 Watts PEP SSB; 500 Watts CW.
- Output to both balanced and unbalanced lines.
- Impedance matching range 20 ohms to 1500 ohms.
- 6 position mode switch for multiple antennas.
- Active crossneedle peak / peak hold metering with backlighting.
- Meter power range 0-300 Watts / 0-1000 Watts.
- Differential capacitor tuning with 2 stators and 1 rotor (360pF - 14pF - 360pF @ 2.5kV).

## Palstar Products

Model	Description	Price
<b>Amplifier</b>		
LA-1K	1KW solid state amplifier	\$3,795.95
<b>Antenna Tuners</b>		
HF-AUTOTUNE	1500 W Antenna Tuner	\$1,549.95
AT5K	3500 W Antenna Tuner	\$1,249.95
AT4K	2500 W Antenna Tuner	\$949.95
BT1500A	1500 W Balanced Antenna Tuner	\$779.95
AT2K	2000 W Antenna Tuner	\$584.95
AT2KD	1999 W Differential Antenna Tuner	\$584.95
AT500	600 W Antenna Tuner	\$489.95
<b>Wattmeters</b>		
PM2000A	2000 W Wattmeter 1.8Mhz to 60Mhz	\$198.95
PM2000AM	200 W Wattmeter mobile 1.8Mhz to 60Mhz	\$198.95
<b>Shortwave Accessories</b>		
SP30B	Speaker 12 Watts (for R30C/CC)	\$124.95
<b>Dummy Loads</b>		
DL1500	Dummy Load 1500 W - 450 Mhz	\$194.95
DL2.5KHP	Dummy Load 2500 W - 1.8-60 Mhz meter/fan	\$695.95
<b>Baluns</b>		
B4000N 4:1	Balun 4/1 4000W-Current-Hi-Z	\$89.95
B4000N 1:1	Balun 1/1 4000W-Current-Low-Z	\$89.95



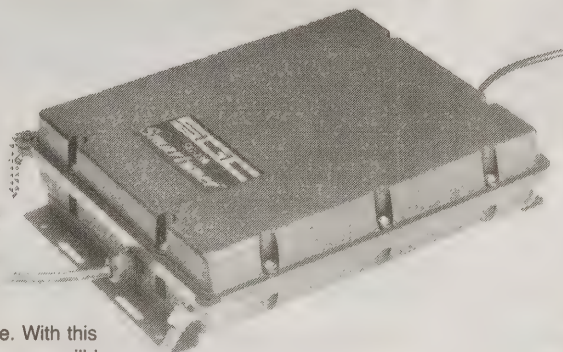
# ANTENNA TUNERS

Smartuners™ are the most versatile and reliable antenna couplers available. Working with power levels from 1.5 to 500 Watts and with frequency ranges spanning the HF bands from a single antenna, they provide all-purpose tuning ideal for base, mobile, or portable operation. Just provide 12 V, connect to transceiver, antenna, and ground, and get on the air with minimum SWR. Visit [sgcworld.com](http://sgcworld.com) for a detailed review of the Smartuner family, and find the right one for your needs. Stop tuning, start talking.

## The Original Smartuner™

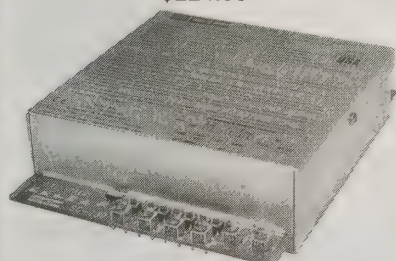
**SG-230 54-14**  
\$499.95

The SG-230 Smartuner was the first product in the HF market to offer fast, flexible tuning without any user interface. It is built in a rugged, factory sealed ABS enclosure. With this tuner and any single antenna, you will have continuous coverage from 1.8 to 30 MHz and it can be used with any transceiver you'll ever own. The SG-230 can be used in base station, mobile, marine and aviation applications, and has been the "Gold Standard" of automatic antenna tuning for more than a decade.



## The Budget Smartuner™

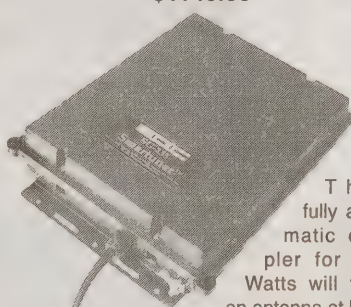
**SG-239 54-22**  
\$224.95



Get quality performance from a low cost package. The SG-239 will operate from 1.8 to 30 MHz with 1.5 to 200 W. Like all Smartuners, it gives you the most flexibility because it will work with any antenna and any transceiver. It also has push buttons for a manual tune option. It weighs only 2 pounds, so you can use it for base or portable.

## HF Antenna Coupler

**SG-235 54-15**  
\$1149.95



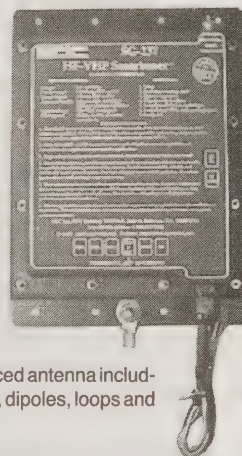
This fully automatic coupler for 500 Watts will tune an antenna at least

23 feet long for the HF bands. The SG-235 automatically evaluates and switches 64 input and 32 output capacitor combinations plus 256 inductance combinations in a pi network design. The tuner remembers the chosen frequency and tuning values and automatically reselects those values when transmitting on that frequency.

## The General Purpose Smartuner™

**SG-237 54-18**  
\$389.95

The SG-237 is the most popular Smartuner. Its rugged construction and small size allow for maximum flexibility. It has a 100 W power rating and expanded coverage to 60 MHz, matching it perfectly with the most popular HF + 6m transceivers. It will work with any balanced or unbalanced antenna including whips, backstays, dipoles, loops and long wires.



## Mobile Tuner

**WEST MOUNTAIN RADIO**



**TARGETuner**

#58425-1473 HRO Price \$234.95

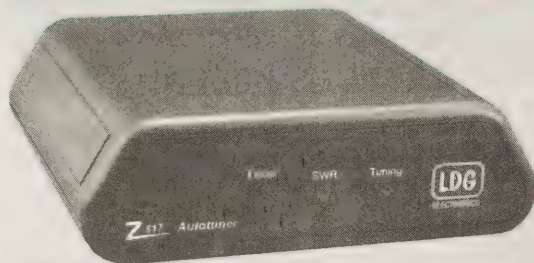
TARGETuner mobile antenna management system provides a controller with intelligent automatic controls for the tunable mobile screwdriver antenna, and a remote RF module.

- Senses RF signal into the antenna.
- No radio data link required for band selection.
- Direction switch and motor control of speed and direction.
- Programmable for stall current sensing.
- Easy programming and memory capabilities.
- Auto tuning.

## SGC Smartuners

Specifications	SG-230	SG-235	SG-237	SG-239
PEP Input (W)	3-200	3-500	3-100	1.5-200
CW Max Input (W)	80	200	40	80
Frequency (MHz)	1.8-30	1.8-30	1.8-60	1.8-30
Input Current (A)	0.9	1.4	0.3	0.23
Antenna Length (<3.3MHz)	8 ft	50 ft	8 ft	40 ft
Antenna Length (>3.3MHz)	23 ft	300 ft	28 ft	100 ft
Dimensions (in)	16x12x3	16x12x3	7x6x1.5	7.5x6x2
Weight (lbs)	8	8	2	2
Water resistant	yes	yes	yes	no
HRO Price	\$499.95	\$1,149.95	\$389.95	\$224.95

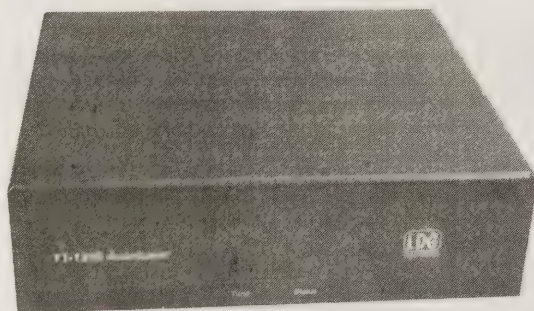
## Yaesu Matching



### Z-817

#### Automatic Tuner for the Yaesu FT-817

The Z-817 automatic tuner, operating on 160 – 6 meters, attaches to the CAT port with the provided cable. Press the One-Touch-Tune button on the tuner and the Z-817 sets mode and power on the radio, tunes, then restores mode and power. Tuning time is 0.2 seconds for recalling one of its 2000 memories, and average time for a full cycle is 2.5 seconds. The Z-817 also works with any QRP radio with output of up to 20 Watts. Press the tune button on the tuner while transmitting a carrier and it finds a match. Includes one foot CAT interface cable. Has CAT-thru port to allow computer control of radio. Tuning range of SWR loads from 6 to 450 ohms. It is powered by four AA batteries (not included). Size is 4.5 x 4.5 x 1.5". **HRO Price \$119.95**



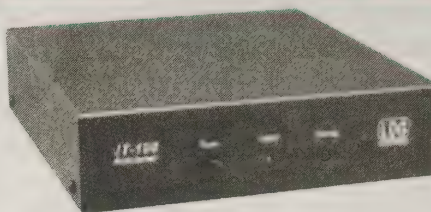
### YT-1200

#### Desktop Tuner for Yaesu Tranceivers

The LDG YT-1200 is an automatic tuner intended for use with popular Yaesu transceivers including the FT-450(D), FT-950, FT-991(A), FTDX-1200 and FTDX-3000. The IC-450 interface cable is included. \*May not work with all firmware versions. The YT-1200 communicates with the radio via its CAT port at any baud rate to control the tuning cycle. The radio's Tuner port powers the tuner, so it requires no external power supply. The YT-1200 handles up to 125 watts SSB or CW, 100 watts on 6 meters or 30 watts on a digital mode.

The YT-1200 operates automatically, beginning a tuning cycle whenever the user presses the tune button on the tuner. It also features LDG's advanced memory tuning, providing 2,000 memory locations; when tuning near a previously used frequency it will recall the settings for nearly instant tuning. It learns your favorite frequencies and bands as you use it. You can also start a tuning cycle manually whenever necessary. **HRO Price \$219.95**

## Icom Matching

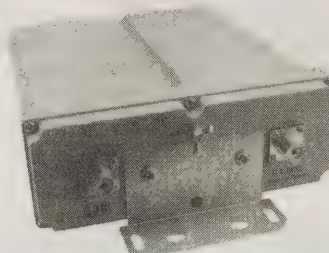


### IT-100 Especially for Icom Radios

The ideal tuner for IC-7300 and other Icom radios covers all frequencies from 1.8 – 54 MHz and will automatically match your antenna in a flash. Tunes 1 to 125 Watts SSB, CW and digital modes. Has a front panel push button for manual or automatic tune plus a status LED. Tune with the IT-100 or use your radio. Includes more than 2,000 memories. Uses latching relays. Tuning range is 4 – 800 ohms, powered by your radio. Includes Icom interface cable. **HRO Price \$164.95**

## Remote Tuners

### A Technological Breakthrough in Remote Tuning!



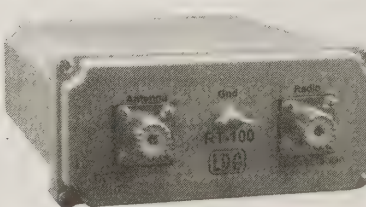
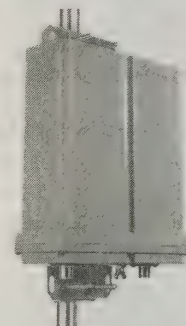
### RT-600 / RC-600

#### Automatic Antenna Tuner / Remote Control

The RT-600 is a 600 watt PEP coax in / coax out remote tuner designed to be placed near the feedpoint of the antenna. If you are worried about power or signal loss due to SWR in your feedline, the RT-600 is the answer. Place the RT-600 near the feedpoint and it will virtually eliminate all feedline loss due to SWR. DC powered over the coax by the RC-600 control unit (included).

- 2000 memories for instantaneous band changing.
- 1.8 to 54.0 MHz coverage. Built-in frequency sensor.
- For dipoles, verticals, Vs, beams or any coax-fed antenna. Optional external balun allows tuning of random length, long wire or ladder line fed antennas.

**HRO Price \$419.95**



### RT-100 / RC-100

#### Automatic Antenna Tuner / Remote Control

Place this 100 watt coax-in / coax-out tuner near the feed-point of the antenna and it will virtually eliminate all feed line loss due to SWR. The RT-100 is DC powered over the coax, so no extra cables are needed. Add your own DC injection circuit or use the LDG RC-100 to power and control the tuner from your shack.

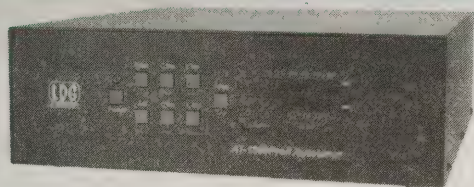
The RC-100 will provide DC power over the coax as well as control for auto mode, lock, and tune. **HRO Price \$229.95**



# LDG

# TUNERS

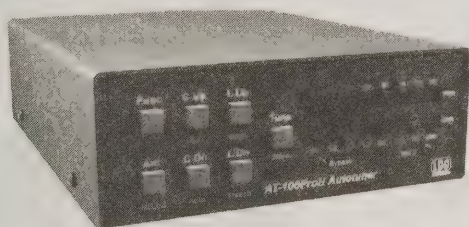
## Tune Two Antennas



**AT-1000Proll**

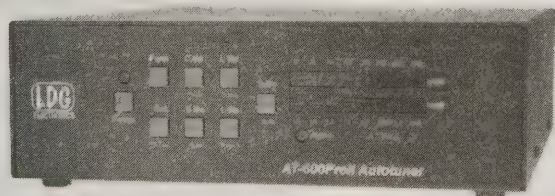
The AT-1000Proll features an auto mode that automatically starts a tuning cycle any time the SWR exceeds a limit you set. Tune two antennas and switch between them. 2000 memories store tuning parameters for each antenna. The unit operates at any power level between 5 and 1000 Watts peak RF input. A large, easy-to-read LED bargraph has two selectable ranges. It will tune from 1.8 to 54 MHz matching a wide range of antennas.

**HRO Price: AT-1000Proll \$499.95**



**AT-100Proll**

This automatic desktop tuner covers 1.8–54 MHz. A two-position antenna switch allows you to switch instantly between two antennas. The AT-100 Proll requires just 1 Watt for operation, but will handle up to 125 Watts, making it suitable for everything from QRP to a typical 100 Watt transceiver. It includes more than 2,000 memories for each antenna, automatically storing tuning configurations for each frequency and band as you use them. Includes antenna and bypass indicators on front panel. **HRO Price: AT-100Proll \$199.95**



**AT-600Proll**

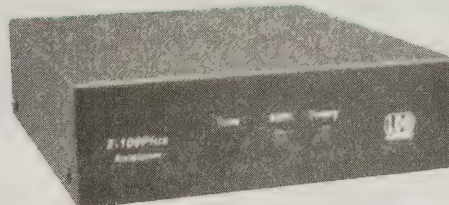
The AT-600Proll will handle up to 600 Watts SSB and CW, 300 on RTTY (1.8–30 MHz), 250 Watts on 54 MHz.

- Processor-controlled switched-L tuner.
- Matches coax-fed antennas. Matches 10:1 SWR down to 1.5:1.
- Use with longwires, random wires and antennas fed with ladder line by adding an optional balun.
- Two antenna ports.
- Requires 11-16VDC at 750mA.

**HRO Price: AT-600Proll \$319.95**

**All LDG products  
come with a  
Two-Year Transferable Warranty**

## Low-Cost Tuner

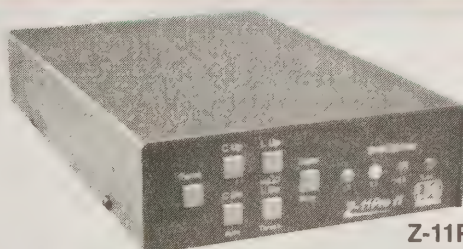


**Z-100Plus**

### Definitive low cost auto tuner!

Designed to provide 125 Watt power handling in SSB, CW and digital modes, the Z100 Plus features 2000 memories that store both frequency and tuning parameters. Operating frequencies are stored with tuning parameters to make memory tunes in a fast 0.1 seconds. Full tunes take an average of only 6 seconds. The tuner will run on any voltage source from 7–18 volts. Six AA batteries (not supplied) will run it for a year of normal use. **HRO Price \$139.95**

## Portable Tuner

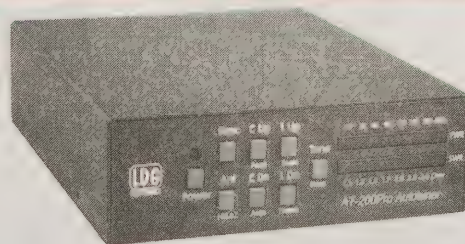


**Z-11Proll**

### Now Includes Battery Pack

Here is everything you need in a small, portable tuner designed for battery operation. Only 5" x 7.7" x 1.5" and weighing 1.5 pounds, it handles 0.1 to 125 Watts, making it ideal for both QRP and standard 100-Watt transceivers from 160–6 meters. With 8,000 memories, the Z-11 Proll uses a state-of-the-art processor-controlled switched-L tuning network. It matches dipoles, verticals, inverted-Vs or virtually any coax-fed antenna. With an optional LDG balun, it will also match longwires or antennas fed with ladder-line. **HRO Price \$164.95**

## High Power Tuner



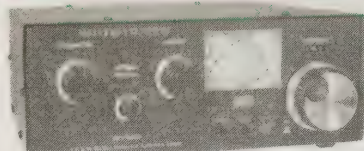
**AT-200Proll**

The AT-200Proll handles up to 250 Watts SSB or CW on 1.8–30 MHz, and 100 Watts on 54 MHz (including 6 Meters). Rugged and easy-to-read LED bar graphs show power and SWR. A function key on the front panel allows you to access data such as mode and status. An LED indicates bypass mode and another shows which antenna is selected. **HRO Price \$239.95**

**MFJ**

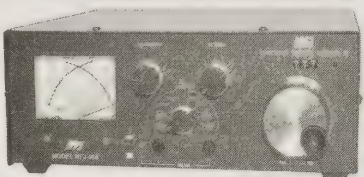
# MANUAL ANTENNA TUNERS

## HF Roller Inductor



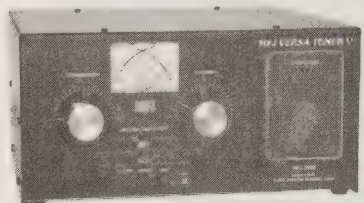
### MFJ-962D

Handles 1.5 KW PEP SSB amplifier input power (800 W output). Peak-reading cross-needle SWR / Wattmeter, AirCore™ roller inductor.



### MFJ-969

Covers 6 thru 160 meters! 300 Watts PEP SSB. TrueActive™ peak-reading SWR / Wattmeter, antenna switch, built-in dummy load, 4:1 balun, Lexan® front panel. 3-1/2 H x 10-1/2 W x 9-1/2 D inches.



### MFJ-989D

The world's most popular legal limit antenna tuner! Easily handles 1500 Watts SSB / CW, 1.8 to 30 MHz including MARS / WARC bands. 500 pF air variable capacitors, AirCore™ roller inductor with fast-tune crank knob, TrueActive™ peak-reading cross-needle SWR / Wattmeter, high voltage current balun, more! 12-7/8 W x 6 H x 11-5/8 D inches.



### MFJ-986

Similar to MFJ-989D, but "D" has 2-knob tuning (differential capacitor and AirCore™ roller inductor) to make tuning fool-proof and easier than ever.

## HF Switched Inductor Tuners



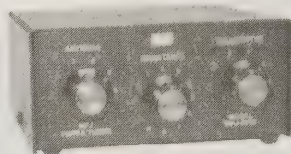
### MFJ-904H

MFJ brings you the world's smallest full power 150 Watt 80-10 Meter Antenna Tuner 3.5 to 30 MHz – with 4:1 balun AND SWR / Wattmeter! Extra wide matching range lets you tune nearly any antenna. Its no toy – its got guts! Built with real air variable capacitors (600 Volt, 322 pF) and three stacked powder iron toroids to handle real power -- not just QRP. Bypass switch lets you bypass tuner when you don't need it. You can use nearly any transceiver at full power with nearly any coax fed or random wire antenna for portable, home, or mobile operation. SO-239 connector. 7-1/4 x 2-1/4 x 2-3/4 inches.



### MFJ-902B

Tiny Travel Tuner, 4-1/2 x 2-1/4 x 3", full 150 W, 80-10 M, tuner bypass switch.



### MFJ-901B

Wide range 200 Watt PEP versa tuner. Covers 1.8 to 30 MHz.

## Manual Tuners



### MFJ-906 / 903

6 Meter Tuners. MFJ-906 has lighted Cross-Needle SWR/Wattmeter with bypass switch. Handles 100W FM/200W SSB. MFJ-903 is without SWR/Wattmeter and bypass switch.



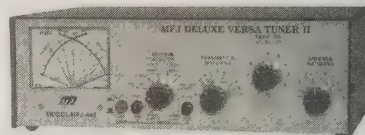
### MFJ-921 / 924

VHF / UHF Tuners. MFJ-921 covers 144 / 220 MHz. MFJ-924 covers 440 MHz. Both include SWR / Wattmeter. 8 W x 2.5 H x 3 D.



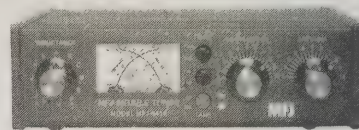
### MFJ-949E

More hams use MFJ-949s than any other antenna tuner! 300 Watts, 1.8 to 30 MHz, custom inductor switch, 1000 volt tuning caps, full size peak / average lighted cross-needle SWR / Wattmeter, 8 position antenna switch, dummy load, scratch proof Lexan® front panel. 3-1/2 H x 10-5/8 W x 7 D inches.



### MFJ-948

Economy version of MFJ- 949E, less dummy load, Lexan® front.



### MFJ-945E

HF / 6 meter mobile tuner. Extends mobile antenna bandwidth. Tiny 8 x 2 x 6" fits easily in car.



### MFJ-941E

Super value tuner handles 300 Watts PEP, covers 1.8-30 MHz, lighted cross-needle SWR / Wattmeter, 8-position antenna switch, 4:1 balun, 1000 volt capacitors.



### MFJ-931

Artificial RF Ground. Creates artificial RF ground or electrically places far-away RF ground directly at rig. Includes 300 W tuner with cross-needle SWR / Wattmeter.



### MFJ-971

Portable / QRP tuner tunes coax, balanced line, random wire 1.8-30 MHz. 30 / 300 or 6 Watt ranges. Matches MFJ QRP rigs. 6 x 6-1/2 x 2-1/2 inches.

# MFJ AUTO TUNERS

# COAX SWITCHES

## Automatic Tuners



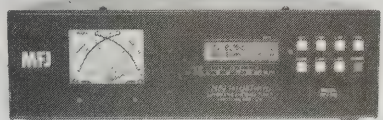
### MFJ-993B

300 Watt automatic HF antenna tuner is like the MFJ-929, but you can select 300 Watts (6-1600 Ohms matching range) or 150 Watts (6-3200 Ohms matching range). Also has 4:1 current balun, remote control port.



### MFJ-994B

600 Watt Intelli-Tuner™. Like MFJ-993B, but has 10,000 VirtualAntenna™ memories and handles 600 Watts CW / SSB, matches 12-800 Ohms. Does not have LCD display, antenna switch or 4:1 balun.



### MFJ-998

1500 Watts SSB / CW Intelli-Tuner™. Digital and analog SWR / Wattmeter, ultra-fast, automatic tuning, wide range (12-1600 Ohms from 1.8 to 30 MHz), radio interfaces, built-in antenna switch for two coax / long wire, automatic bypass to protect your amplifier, field upgradeable software. MFJ-998RT with MFJ-4117 Bias Tee also available for remote use.



### MFJ-991B

First dual-power level Automatic Tuner: 300 W / 6-1600 Ohms, 150 W / 6-3200 Ohms. 10,000 virtual antenna memories. Cross-needle SWR / Wattmeter.

## Random Wire Manual

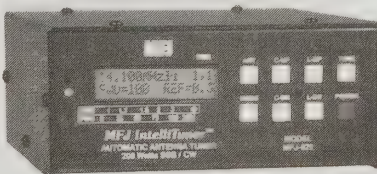
### MFJ-16010

Random Wire Tuner. Operate all bands anywhere with MFJ's reversible L-network. 1.8-30 MHz. 200 W PEP. Tiny at 2 W x 3 H x 4 D. Turns a random wire into a powerful transmitting antenna.



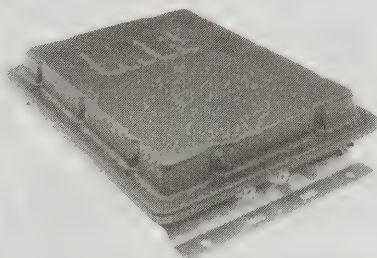
### MFJ-939I/K/Y

From 2 to 200 Watts automatic antenna tuner. Plug and Play for ICOM, Yaesu, Alinco and other HF rigs. Has 20,000 memories, covers 1.8-30MHz, powered by transceiver and includes interface cable. Requires adjustment of internal jumper and cable for specific radio. Audio SWR meter, small size, instant recall and fast tuning.



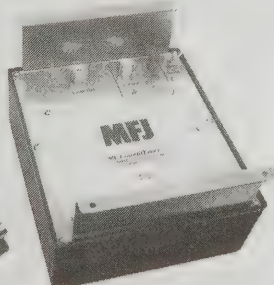
### MFJ-929

200 Watt automatic HF antenna tuner in a compact size 6-1/2 W x 2-7/8 H x 8-3/8 D inches. Ultra-fast, 20,000 VirtualAntenna™ Memories, antenna switch, efficient L-network, matches 6-1600 Ohms, 1.8-30 MHz. Digital SWR / Wattmeter, radio interface.



### MFJ-926B

200 W HF remote automatic tuner. Matches random wire or coax feed. Fully weather sealed for remote outdoor/marine use. Includes MFJ-4117 Bias-Tee.



### MFJ-927

Weather protected, fully automatic remote auto tuner for wire and coax antennas. 200 W, powers through coax, no separate power cable needed.

## Surge Protector

### MFJ-270



Safeguard your expensive gear from static electricity and lightning induced surges traveling on 50 Ohm coaxial line. Ultrafast gas discharge tube safely shunts up to 5000 amps of peak impulse current harmlessly to an independent ground. SWR less than 1.1:1. Less than 0.1 dB loss. Use up to 1000 MHz. Handles 400 W PEP. MFJ-270N has low loss N-connectors. MFJ-272 with SO-239s, handles 1.5 kW PEP.

## HF Antenna Switches

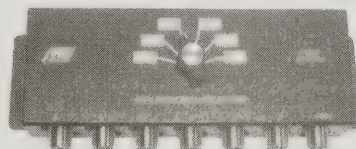
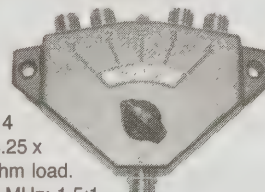


### MFJ-1702C

2 position antenna coax switch. New center ground, lightning arrestor. 2.5 kW PEP, 1 kW CW. Loss below .2 dB. 50 dB isolation @ 450 MHz. 50 ohms. 3 x 2 x 3 inches.

### MFJ-1704

Like MFJ-1702C. 4 positions. 6.25 x 4.25 x 1.25 inches. 50 ohm load. SWR 1.1: 1 to 30 MHz; 1.5:1, 30-650 MHz. SO-239.

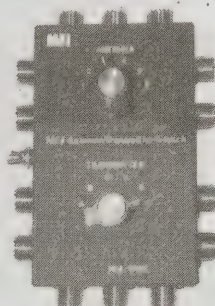


### MFJ-1701

6 position antenna switch, 50-75 ohms. Handles 2 kW PEP or 1 kW CW. 1.8-30 MHz. SO-239 connectors. Unused positions automatically grounded.

### MFJ-1700C

6 position antenna and transceiver switch switches between 1-6 antennas and 1-6 rigs. Handles 2 kW PEP or 1 kW CW, 1.8 to 30 MHz.



# LIGHTNING PROTECTION / COAX SWITCHES

## Lightning Protected Coax Switches

**ALPHA DELTA**



**Delta-4B**

### 4 Position Switch

This lightning protected 4 position RF coax

switch uses the Alpha Delta ARC-PLUG® cartridge to protect your equipment from electrical surges. The exclusive center "off" (ground) position internally disconnects and grounds all antenna circuits. It has cast housing with constant impedance micro-strip cavity construction. Features a positive detent roller bearing switch drive. Handles full legal power. Delta-4/N for type "N" connectors. The Delta-4 handles frequencies through 500 MHz and the Delta-4/N through 1.3 GHz. **HRO Price \$94.95; Type N \$99.95.**



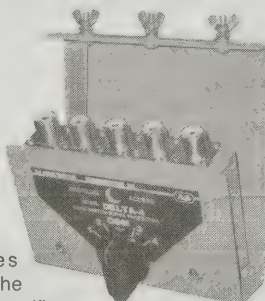
**Delta-2B**

### 2 Position Switch

This 2 position

coax switch has the same features as the Delta-4. Order UHF or type "N" connectors for low-loss performance through 1.3 GHz. **HRO Price \$74.95; Type N \$84.95.**

### Antenna Selector Console Desktop Coax Switch



This series retains all the features and specifications of the precision **DELTA-4B** series, including ARC-PLUG® module surge protection, in a desk top console that will sit right next to the equipment on your desk without having to be secured or bolted down. The console features a powder-coated steel housing and a solid brass ground buss, with #10 wire attachment hardware across the rear of the housing providing a common ground point for all station equipment and accessories.

**Model ASC-4B** Antenna Selector Console Switch (4 position, UHF Connectors thru 500 MHz). **HRO Price \$154.95**

**Model ASC-4B / N** Antenna Selector Console Switch (4 position, N Connectors thru 1.3 GHz). **HRO Price \$159.95**

## HF Antenna Switches



### 2 Position Coax Switch

**CS-201**

Daiwa has two heavy-duty coaxial switches. Both are usable to 500 MHz and the unused positions are grounded. Switches are available at slightly higher prices with type "N" connectors. **HRO Price \$32.95**



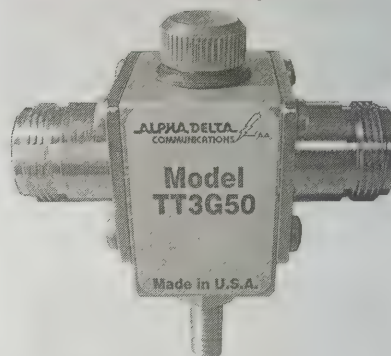
### 2-Position Coax Switch

**CX-210A**

Diamond's heavy-duty wideband coax switch, the CX-210A, is a high quality 2 position coax switch with SO-239 connections. Like most Diamond products, this switch is very well built and durable. Two screws on the back allow you to mount the switch to a flat surface. **HRO Discount Price: \$49.95**

**ALPHA DELTA**

### Transi-Traps



The **ATT3G50** coaxial surge protector was designed for the cellular, microwave point-to-point, and the broadband wireless industry. These products feature very low loss performance through 3 GHz for 50N models and 500MHz for 50U models. Typical loss is 0.1 dB at 1 GHz through 0.5 dB at 3 GHz. This series represents the lowest loss broadband design in the industry. Choose connector: type "N" (50N models) or "UHF" (50U models).

The Defense Logistic Agency (DLA) has assigned National Stock Number (NSN) 01 5470278 to the Model TT3G50 Coax Surge Protector and NSN 5325 01 5466841 to the 3G50 ARC-PLUG® Cartridge for use in all US Military and NATO applications, worldwide.

#### ATT3G 50N

200 W - 3.0 GHz, Type N \$59.95

#### ATT3G 50NHP

2 kW - 3.0 GHz, Type N \$59.95

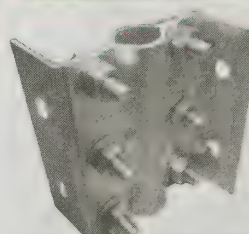
#### ATT3G 50U

200 W - 500 MHz, UHF \$49.95

#### ATT3G 50UHP

2 kW - 500 MHz, UHF \$49.95

## Ground Clamp



**Model UCGC**

The UCGC clamp mounts directly on a standard 5/8" copper ground rod. You can attach up to 4 Model ATT 3G50 series coax surge protectors. The ground clamp is made from solid copper and has stainless steel mounting hardware with 6 bolts, washers, and nuts. It includes an adjustable copper ground wire clamp for your station single point ground wire of up to 4 gauge in size. **HRO Price \$49.95**

# LIGHTNING PROTECTION

## Lightning Protection

### PolyPhaser<sup>®</sup>

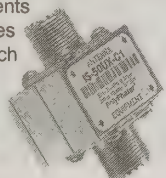
#### Coaxial Impulse Suppressors

Hermetically-sealed voltage sensitive gas tubes and other components assure that surge voltages and currents will not reach your equipment.

#### Flange Mounts

HRO Price

\$64.95 - \$69.95

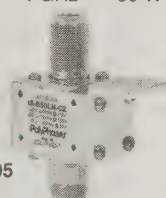


Model	Frequency Range MHz	Maximum Power Watts
IS-50 UX-CO	1.5-700	HF - 2 kW
		VHF - 375 W
		UHF - 125 W
IS-50 NX-CO	1.5-700	HF - 2 kW
		VHF - 375 W
		UHF - 125 W
IS-50 NX-C2	125-220 w/ N conn. 220-700 700 MHz	VHF - 375 W
		UHF - 125 W
		1 GHz - 50 W

#### Bulkhead Mounts

HRO Price \$69.95

Type-N HRO Price \$74.95



Model	Frequency Range MHz	Maximum Power Watts
IS-B50 LU-CO-ME	1.5-400	HF - 2 kW
		VHF - 375 W
		UHF - 125 W
IS-B50 HN-CO	1.5-700	HF - 3 kW
		VHF - 500 W
		UHF - 200 W

#### Rotator Control Protector

Model IS-RCT

Provides protection for rotator controllers, motors, control box and other nearby equipment. HRO Price Call

#### Power Line

#### Extension Protector

Two-outlet extension cords with master on/off switch and circuit breaker.

Model	Length	HRO Price
IS-PLDO-120-15A	15'	120 V@15 A Call
IS-PLDO-120-20A	6'	120 V@20 A Call

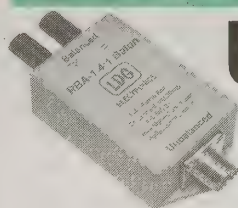
#### Grounding Panel

Model CU-SPGP

A .062" thick copper plate mounted on a painted 1/2" plywood backing. Mounting protectors and a single ground point established for station equipment. Comes with concrete anchors, all mounting screws, 10' of 1.5" copper grounding strap, 2 brass sandwich plates, and joint compound. 18" x 12". HRO Price \$CALL

## Baluns

### LDG



200 Watts  
1.8 to 30 MHz

	HRO Prices
RBA-4:1 Remote 4:1 Balun	\$29.95
RBA-1:1 Remote 1:1 Balun	\$29.95
RU-1:1 Remote 1:1 UNUN	\$29.95
RU-4:1 Remote 4:1 UNUN	\$29.95
RU-9:1 Remote 9:1 UNUN	\$29.95

### RadioWavz

The RadioWavz baluns are designed to handle full legal power with a low SWR.



1:1 Air	B11a	\$29.95
1:1 Ferrite	B11f	\$39.95
1:1 Isolation	B11i	\$39.95
1:4 Voltage Air	B14va	\$42.95
1:4 Voltage Ferrite	B14vf	\$42.95
1:4 Current Air	B14ca	\$42.95
1:4 Current Ferrite	B14cf	\$52.95
1:6 Current Isolation	B16ci	\$53.95
1:9 Balun Isolation TX	B19tx	\$42.95

## Insulators

### MFJ

#### Mid Feed Point Ladder Line Insulator

MFJ-16F01



The MFJ-16F01 is an extra strong fiberglass ladder line middle insulator. It contains a high strength coax connector at the midpoint. It contains a high strength coax connector at the midpoint, an SO-239, and features quadruple weave-through ladder line for stress relief. HRO Price \$15.95

### ALPHA DELTA



#### Delta-C

Dipole kit with center insulator with SEP static suppressor and 2 end Insulators, no wire. HRO Discount Price: \$29.95

# BALUNS

## PALOMAR ENGINEERS<sup>®</sup>

### CB-4-1500TS



The CB-4-1500TS Balun is a 4:1 impedance transformer designed to step down balanced ladder line feed point impedances of 600-50 ohms to 150-16.7 ohms unbalanced coax at full legal amateur power of 1500 watts PEP from 1.8 to 31 MHz. When connected to an antenna tuner output capable of tuning a 3:1 SWR range (16.7-150 ohms for 50 ohm coax) the CB-4-1500AT provides a suitable range for antenna tuner adjustment to 1:1 SWR as seen on the input of the antenna tuner. Also works with 75 ohm coax as well. HRO Price \$89.95

### CB-1-5000EB

The CB-1-5000EB current balun is useful as common mode feed line chokes or unbalanced coax to balanced antenna interface. SO-239 input to side terminal/eyebolt output. Rated 5000 Watts PEP from 1-61 MHz. Use as dipole antenna to coax interface, and a common mode choke to keep RF on the antenna and off the outside of the coax braid. HRO Price \$99.95



### CMNF-500-50



For coax feed lines with receive and transmit signals (500 W PEP 50 ohm), has wide frequency range and excellent attenuation of common mode noise interference. Reduces broadband common mode receiver noise picked up on the outside of the antenna coax feed line. Not effective for noise from AC power lines or noise received directly by antenna. HRO Price \$59.95

### CU-1-5000SO

The CU-1-5000SO is a high power UNUN which utilizes mil-spec coax cable for the windings on an extra large core toroid with coax silver shield and silver braid for low loss. The dielectric is Teflon<sup>®</sup> insulation for high voltage ratings of 1,900 volts. (A typical 5KW signal at 50 ohms impedance will have a voltage of 500 volts at 1:1 SWR.) Rated 5KW PEP/1500 Watts AM/RTTY/CW from 1.8-30 Mhz, less at 50 Mhz. If you run RTTY contests or FT8 at 1500W output, this is the unun you need - it won't burn out at heavy 1500W duty cycles. HRO Price \$99.95



## HF + 6m Verticals

### AV-640

Uses quarter wave stubs on 6, 10, 12, and 17 meters and efficient end loading coil and capacity hats on 15, 20, 30, and 40 meters. No radials. No traps. No ground. No tuning. Handles 1500 Watts. Sleek, low profile. Small area required for mounting. Automatic bandswitching, single coax cable feed, each band is individually tunable, wide VSWR bandwidth.



### AV-620

Covers all bands 6 through 20 Meters.



### AV-680

No ground or radials needed. 6-80 m, 26 ft tall, 18.5 lbs. 1500 W key down for two minutes. 1/4 wave stubs on 6, 10, 12, and 17m. Wide, low SWR bandwidth. Auto band switching. Low 2.9 sq ft wind surface, mounts on decks, roofs, patios. 65 mph wind survival.

All Hy-Gain multi-band vertical antennas are entirely self-supporting. No guying required. Their extremely low angle of radiation and omnidirectional patterns offer remarkable DX performance. All handle 1500W PEP SSB and have low SWR. All except the AV-18VS have automatic band switching, and all except the AV-18HT include a 12-inch heavy duty mast support bracket. Radiators are heavy duty, slotted, tapered swaged, aircraft aluminum tubing with full circumference compression clamps. All include all stainless steel hardware. Recessed SO-239 prevents moisture damage. Two year limited warranty.

## HF + 160

### AV-18HT

#### AV-18HT

The famous Hy-Gain HyTower, 53 ft tall, 114 lbs, covers 10-80 m with 160 m and 17 m optional. Automatic band selection uses unique stub-decoupling. 250 kHz 80 m bandwidth with 2:1 SWR. LC-160Q optional base loading coil for 160 m and MK-17 optional 17 m kit. Special tilt-over hinged base for easy raising and lowering.



### DX-88

#### 10-80 + 160 Optional

10-80 m with 160 m optional, 25 ft tall, 18 lbs. All bands are easily tuned with exclusive adjustable capacitors. 80 / 40 m tuneable from ground without lowering antenna. Super heavy-duty construction. Options include Kit-160-88 for 160 m add-on, GRK-88 ground radial system, and RRK-88 roof radial system.

DX-88

## 6-160 Meters

### AV-6160

#### AV-6160

6-160 m, 43 ft tall, 20 lbs, low profile, self-supporting vertical assemblies in less than an hour. Entire length radiates for exceptionally low angle radiation. A wide range automatic or manual antenna tuner at your rig easily matches this antenna for all bands. Includes ATB-65 base mount. Optimized balun design allows direct coax feed.

Hygain sells a large assortment of multi-band beams, wire antennas, and other verticals. Ask about baluns, aluminum tubing, and parts.

## HF Verticals

### DX-77A

10-40 m, 29 ft tall, 25 lbs. No ground radials required. Off-center-fed Windom has 55% greater bandwidth than competitive verticals. Heavy-duty tiltable base. Each band independently tunable.

### AV-18VS

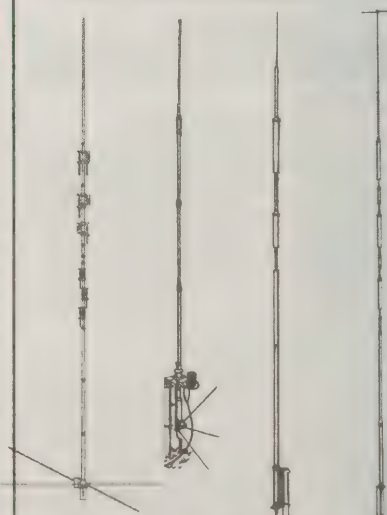
Covers 80 through 10 m continuously. Easily change bands by manually moving band change wire at base loading coil. Handles 1500 W PEP. 18 ft tapered 6063-T6 aircraft aluminum tubing strength. 4 lbs. Stainless steel hardware. 80 mph wind survival.

### AV-12AVQ

10-15-20 m, 13 ft tall, 9 lbs. Automatic band switching, self supporting. 1500W, Hy-Q™ traps give full 1/4 wave performance with broad banding top hat. SWR less than 2:1. Ground or roof mount; requires radials.

### AV-14AVQ

10-40 m, 18 ft tall, 9 lbs, 1500 W PEP. Auto band switching. Ground or roof mount. Requires radials. Heavy duty bracket with recessed SO-239 mounts on 1.5-1.625" diameter mast. Optional MK-80, 80 m add-on kit, and AV-14RMQ roof mount kit. AV-12AVQ 13 ft 3-band version also available.



DX-77A / AV-18VS / AV-12AVQ / AV-14AVQ

# MFJ

## MFJ-1982 End Fed Horizontal Wire Antennas

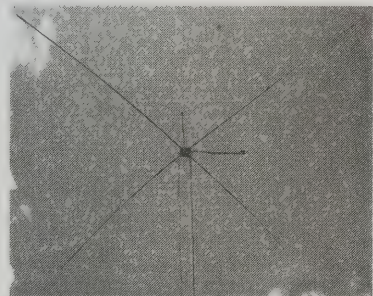
End-fed radiators have the unique quality of resonating on the 1/2-wave fundamental frequency plus odd / even harmonics above! Broad-band matching transformer at feed point lets the entire HF spectrum be yours! SWR is so low you may never need a tuner.

Installation is fast for home, road, emergencies – just one high center or end support. Toss your EFHW over a high limb for an inverted-V, raise the far end high for a powerful sloper, or even go



vertical with an inverted-L. Comes with a rugged insulated-wire radiator that prevents detuning when in contact with limbs/branches. "No-sag" end insulator slides over branches and through foliage. Dark jacketed wire is virtually invisible. Don't let antenna restrictions keep you off the air! Power ratings are in Watts PEP for SSB / CW modes, with 50% or less transmit time (ICAS).

MFJ-1982LP	\$59.95	30 W	QRP	80-10 Meters
MFJ-1984LP	\$49.95	30 W	QRP	40-10 Meters
MFJ-1982MP	\$79.95	300 W	Restricted space	80-10 Meters
MFJ-1984MP	\$69.95	300 W	Restricted space	40-10 Meters
MFJ-1982HP	\$99.95	800 W	High power	80-10 Meters
MFJ-1984HP	\$89.95	800 W	High power	40-10 Meters



## MFJ-1836 1/2-Wave, 6-Band HF

### Cobweb Antenna

Restricted space spoiling your operating fun? MFJ Cobweb puts your call back on the map! This six-band (20, 17, 15, 12, 10, 6 Meters) full half-wave Cobweb Antenna is perfect for restricted space or portable operation. Sky-gray fiberglass spreaders and nearly invisible wire elements (flat 9 x 9 x 1/2 feet square; 8 pounds) blend in with your surroundings while standing tough against nasty weather.

Outstanding performance! Horizontally polarized for less local noise pickup plus solid gain over verticals will allow you to work DX easily – even on QRP. Omni-directional. No radials needed! Works great at low heights. Low SWR is due to MFJ's exclusive Spider-Match™ broadband network. Use lightweight TV hardware to mount on your chimney, balcony, mast. Low in cost, but big on performance.

HRO Price MFJ-1836 \$249.95

HRO Price MFJ-1836H \$279.95 legal limit model.

HRO Price MFJ-1836HK34, \$129.95 adds 30 / 40 meters.

## MFJ-1838 40-6 Meter Cobweb Super Heavy-Duty Antenna

The new, super heavy-duty 40-6 meter Cobweb Antenna, MFJ-1838, is built to survive harsh northern winters, heavy snow, ice and strong winds. It has super-strong large-diameter fiberglass and heavy-duty 14 gauge stranded hard copper wire. 8-bands: 40, 30, 20, 17, 15, 12, 10, 6 Meters, 1500 Watts. 12 feet, 23 lbs. HRO Price \$419.95

# ANTENNAS

## MFJ-1846 MFJ-1848

### Hex Beam Antennas



1500 Watt HexBeam delivers solid gain and directivity on 20, 17, 15, 12, 10, and 6 Meters in a low-profile package that will have your pocket-book and your neighbors smiling!

The MFJ-1846 uses an updated G3TXQ element configuration for excellent gain, improved bandwidth, superior front-to-back ratio and low SWR -- makes snagging rare DX easy! That's just the beginning! MFJ takes the HexBeam's unique balanced-tension framework to a new level with rugged mounting hardware, exceptionally durable spreaders and sliding antenna-wire guides -- all designed to ensure years of reliable service in tough weather conditions. Gain and directivity makes the difference when DXing or maintaining schedules and the HexBeam delivers!

### MFJ-1846 Specifications:

- Gain: 5.3 dBi in free space (more over ground).
- Front-to-Back Ratio: 15 - 20 dB.
- Typical turning radius: 11 feet.
- Maximum mast size: 2-1/16" OD.
- Weight: 25 pounds.
- Wind loading surface: 3.5 square feet

HRO Price MFJ-1846 \$499.95

### MFJ-1848 Specifications:

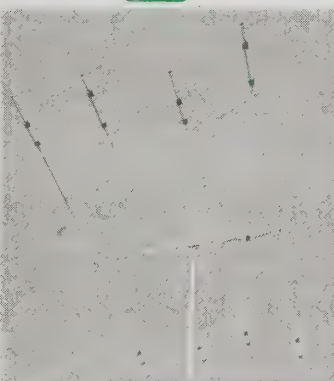
- 8-Bands: 40, 30, 20, 17, 15, 12, 10, 6 Meters.
- 40 and 30 meters are each one-element radiators.
- 1500W.
- 14 foot turning radius.
- Weight 28 lbs.

HRO Price MFJ-1848 \$719.95



CUSHCRAFT  
COMMUNICATIONS ANTENNAS

## MA-6B 2-Elements on 20, 17, 15, 12, 10, 6 Meters



Cushcraft's latest MA-6B gives you 2-elements on six bands! You get solid signal-boosting directivity in a bantam-size and weight.

Mount on your roof or mast using standard TV hardware. It's perfect for exploring exciting DX without the high cost and heavy

lifting of installing a large tower and full-sized array. Its 7-foot 3-inch boom has a turning radius less than 9 feet. Contest tough – handles 1500 Watts.

The unique MA-6B is a two-element Yagi on 20 / 17 / 15 / 12 / 10 / 6 meters. It delivers solid power-multiplying gain over a dipole on all bands. You get automatic band switching and a super easy installation in a compact 26-pound package. When working DX, what really matters are the interfering signals and noise you don't hear. That's where the MA-6B's impressive side rejection and front-to-back ratio really shines. HRO Price \$719.95

MA-5B Like MA-6B but five bands: 20, 17, 15, 12, 10 meters. 12 and 17 meters is a single element trapped dipole HRO Price \$499.95

# HF / VHF VERTICAL BASE ANTENNAS



## Titan DX

The Titan is a center fed GAP vertical, that provides a host of benefits in a rugged, yet manageable form. The Titan offers broad, continuous frequency coverage in a no tune, easy to assemble format. Designed to work in a limited space or as the perfect compliment to an antenna farm. NO RADIALS required.

Total continuous coverage under 2:1 on 10m, 12m, 15m, 17m, 20m, 30m, 40m, and 100 kHz on 80m.

## Challenger

The Challenger is capable of operating on eight separate bands from 3.5 MHz to 144 MHz. Use it on 80, 40, 20, 15, 12, 10, 6 and 2 meter bands with over 130 kHz bandwidth on 80 m.

The antenna is designed to be mounted directly in the ground or elevated. A ground mount is provided. The Challenger may be roof mounted. The antenna requires a counter poise of three 25 foot insulated wires.

## GAP Antennas

Model	Bands	Bandwidth (under 2:1)	Height (ft)	Weight (lbs)	Mount	Counter poise	Ground Area Required	HRO Price*
Challenger	80,40,20, 15,12,10, 6,2m	Entire band except 130kHz 80m	31.5	18	Ground or elevated. Ground Mt supplied	3 at 25'	10' x 12'	CALL
Voyager DX	160,80,40 20m	Entire band except 900kHz 160m	45	30	Ground. Aluminum pivot and guy brackets supplied	3 at 57'	4 guy points 25 ft from base	CALL
Eagle DX	40,20,17, 15,12,10m	Entire band except 500 kHz 10m	21	11	Most anywhere. Pole mount supplied for 1.25 ant Mast	3 rigid at 80" long		CALL
Titan DX	80,40,30, 20,17,15, 12, 10m	Entire band except 100 kHz 80m	25	25	Most anywhere. Pole mount supplied for 1.25 ant Mast	4rigid at 80" long		CALL

\* All GAP antennas shipped PLUS freight

## Eagle DX

The Eagle DX weighs just 11 pounds and can be installed almost anywhere. It is essentially a set of vertical dipoles with no traps, coils or transformers.

It covers 40, 20, 17, 15 and 10 meters with the entire band at a VSWR of 2:1 or less. For 10 m this is 500 kHz. No antenna tuner is required.

## Voyager DX

The Voyager DX is manufactured specifically to provide efficient low band operation from the typical backyard without a huge investment in time, money, or space.

It is not another "add a kit" antenna for 160m. GAP technology opens up the low bands. Emphasis was given to 160 m and 80 m when designing the Voyager.

The antenna employs a capacity hat with circular ring to reduce the physical height to 45 feet while maintaining an electrical height of 66 feet.

Parallel tuner rods are used in its design. No tuning or matching are required to put the Voyager on the air.

## Ultra-Compact Vertical

# Maldol

### HVU-8

8 Bands on HF / 2m / 70 cm

HRO Price \$339.95



At only half the height and weight of traditional HF vertical antennas, model HVU-8 includes 2m and 70cm. It is easily configured and installed in confined or restricted spaces such as apartment balconies, or for temporary use. Each HF

band and 6m has an independently tuned radiator and radial system while the main antenna mast is tuned for constant operation on 2m / 70 cm.

- HF and 6m: 1/4 wave.
- 2m: 1/2 wave 2.15 dBi gain.
- 70cm: two 5/8 waves in phase, 5.5 dBi gain.
- Impedance: 50 Ohm.
- Max power HF: 200 W SSB; 6m-70 cm: 150 W FM.
- Height: 8 ft 6 inches.
- Weight: 5 lbs 7 ozs.



## Outpost™

### Tripod / Ground Coupler Ground Mount System

HRO Price \$275.95

- Matches the base impedance of most mobile HF antennas.
- Fold-over 3/8 x 24 SO-239 top mount.
- Constructed of aircraft 6061-T6 aluminum, stainless steel hardware and wing nuts.
- No digging—no holes in ground—no concrete.
- Fold-out legs act as a large capacitor providing proper coupling to the ground and proper base impedance to the antenna. Fold-up design for 10-minute installation.

# HF LONG WIRE ANTENNAS

## RadioWavz

Product	Model	HRO Price
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### G5RV Line

(w / heavy-duty ladder line)

G5RV Jr.	\$59.95
G5RV Lite-E	\$99.95
G5RV-E	\$84.95
G5RV MAX-E	\$129.95

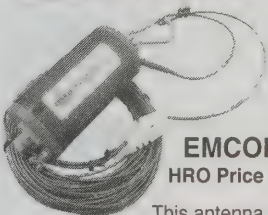


### Double Bazooka

80 m	80DBZ	\$94.95
75 m	75DBZ	\$89.95
40 m	40DBZ	\$72.95
20 m	20DBZ	\$46.95
17 m	17DBZ	\$44.95
15 m	15DBZ	\$49.95
10 m	10DBZ	\$44.95
6 m	6 DBZ	\$42.95
2 m	2DBZ	\$42.95

### Portable HF

## CHAMELEON™ ANTENNA



**EMCOMM II**  
HRO Price \$124.95

This antenna for back-up emergency HF system or permanent installation has an integral broadband impedance matching network (transformer 5:1) allowing broadband antenna tuning. It is the perfect backup antenna for apartments, condominiums, homeowners associations, deed restrictions, and CCRs, ARES, RACES, MARS, EMCOMM, NVIS, first responders, and especially for emergency preparedness.

Totally waterproof, the antenna is 60' long and covers 6 m to 160 m. An external tuner is required. It weighs 1 pound and has an SO-239 RF connection.

The antenna will perform as a sloper or inverted "V" configuration. For a NVIS configuration (40 m - 80 m) the antenna must be installed horizontally with the ground and elevated between 9' and 12' high. It does not require any ground-plane but will perform better with one. A ground terminal is available.

Product	Model	HRO Price
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### Dipoles with 1:1 Balun

80 m	80DP11	\$69.95
40 m	40DP11	\$59.95
20 m	20DP11	\$49.95
10 m	10DP11	\$44.95

### DX (OCF) Windom

DX 40	DX40	\$69.95
DX 80	DX80MSH	\$119.95



### Hex Beams

**Covering HF & 6 M**  
HRO Price - Call

### Sentinel Series Features

- Single coax feed (except for Barrett and Broadband options).
- Low SWR.
- No tuning; just plug and play.
- Improved broad band response over original hex beam design.
- Performs well at lower heights.
- Handles full legal limit of power.
- Small physical foot print.
- Light enough for a push up mast.
- Symmetrical shape withstands wind better.

### Sentinel Models

**Sentinel Barrett Series Hex Beam**  
160-10 m or 40-6 m.

**Sentinel Hex Beam 6 bands**  
10, 12, 15, 17, 20, and 40 m.

**Sentinel Hex Beam 10 m & 6 m**  
Dual band.

**Sentinel Hex Beam 4-band**  
Covers 20, 15, 10, and 6 m.

**Sentinel Hex Beam 20 m**  
Single band antenna.

**Sentinel Hex Beam 10 m**  
Single band antenna.

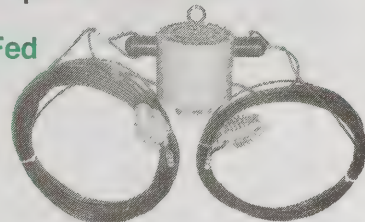
**Sentinel Hex Beam 6 m**  
Single band antenna.

## HF OCF Antennas

## BUCKMASTER

### HF Dipole Antennas

### Off-Center-Fed (OCF)



World-wide DX, multi-band, no tuner required.

**4-Band: 40, 20, 10, & 6 meters.**

68 feet (23+45) long.

DX-OCF-40	300W	HRO Price \$236.95
DX-OCF-HP40	3kW	HRO Price \$342.95

**7-Band: 75 / 80, 40, 20, 17, 12, 10, 6 meters.**

135 feet (45+90) long.

DX-OCF	300W	HRO Price \$241.95
DX-OCF-HP	3kW	HRO Price \$349.95

**8-Band: 160, 75/80, 40, 20, 17, 12, 10, 6 meters.**

270 feet (90+180) long.

DX-OCF-160	300W	HRO Price \$317.95
DX-OCF-HP160	3kW	HRO Price \$422.95

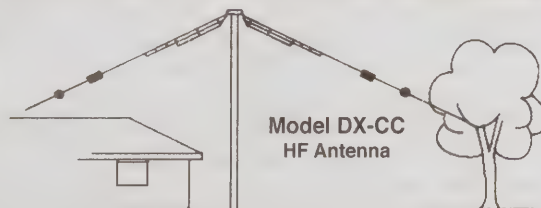
## Limited Space Antennas

## ALPHA DELTA

All of Alpha Delta's limited space antennas use stainless steel hardware where required, are fully assembled, and are manufactured to withstand severe weather. SO-239 connectors. The DX-A and DX-B slopers must be attached to a tower with an HF size beam on top to be a "capacity hat" for proper tuning. Power Rating: 1000 Watts CW/PEP.

**Model DX-B** is a single wire, high performance quarter-wave sloper antenna for 160, 80, 40 & 30 meters. For limited space, the antenna requires only 60 feet for installation. Use with a wide range antenna tuner. Pre-assembled and pre-tuned. Has stainless steel hardware, 12 gauge insulated solid copper wire and the Alpha Delta "ISO-RES" RF choke coils, 50 ohm coax feed. **HRO Price \$119.95**

**Model DX-A:** Quarter wave twin sloper for 160-80-40 meters. One leg is 67'; the other 55'. Installs as an inverted-V. **HRO Price \$99.95**



**Model DX-CC:** A no trap 80-40-20-15-10 meter dipole. 82' long. **HRO Price \$159.95**

**Model DX-DD:** A no trap 80-40 meter dipole. 82' long. **HRO Price \$139.95**

**Model DX-EE:** A no trap 40-20-15-10 meter dipole. Only 40' long. **HRO Price \$149.95**

## HF Antenna Whips

### MFJ-16XXT

HF antenna whips handle 250 Watts PEP. Whips are about 7 feet fully extended and collapse to about 4 feet for easy storage. Simply screws into any 3/8 x 24 female mount for quick band-changing.

Each whip is ruggedly constructed. Heavy duty 4-foot, 3/8" diameter fiberglass rods, nearly indestructible eighth-inch diameter PH-17-7 stainless steel whips, and chrome-plated brass fittings will give you years of service.

Sleek low-profile construction has low wind loading and the semi-rigid fiberglass eliminates the need for springs or guys. Black anti-static jacket protects the loading coil and blends with any vehicle. Stainless steel whips are adjustable for lowest SWR. Push the whips down to park in the garage or fully extend for maximum efficiency during mobile operation. Includes allen wrench and complete tuning and matching instructions.

MFJ-1675T - 75 M	MFJ-1617T - 17 M
MFJ-1660T - 60 M	MFJ-1615T - 15 M
MFJ-1640T - 40 M	MFJ-1612T - 12 M
MFJ-1630T - 30 M	MFJ-1610T - 10 M
MFJ-1620T - 20 M	MFJ-1606T - 6 M

## Telescopic Whips

### MFJ-197X

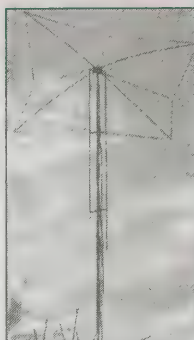
MFJ's premium stainless steel telescopic whips are the perfect choice for building collapsible multi-band dipoles, mobiles, portable and base antennas. They are handy for traveling, mini DXpeditions, vacations, etc. Use them to replace your current automatic screw-driver whip for a more highly efficient fixed mobile operation. Rigidly collared at the base, stronger than plated brass, and impervious to rust and corrosion, they stand up to the forces of nature and the rigors of portable operation where others might fail.

Model	Number Sections	Height Feet	Collapsed Inches
MFJ-1979	10	17	27
MFJ-1977	7	12	26
MFJ-1976	7	10	20
MFJ-1974	5	8	24
MFJ-1972	3	4.5	22

## Base Antennas

### 80 - 2 m MFJ-1798

Ten band halfwave vertical antenna. Covers 10 bands: 75 / 80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 meters. No ground radials or ground needed because of the effective counterpoise that is 12 feet across. Mount from ground level to roof top. The feedline is isolated from the antenna using MFJ's AirCore™ balun. Achieves full-sized performance with full-size radiators for 2-20 meters and high efficiency end-loading for 30, 40 and 75 / 80 meters. UPS Shippable.



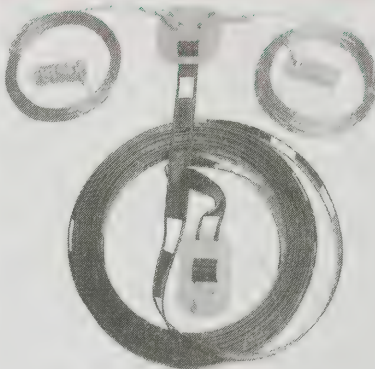
### 40 - 6 m Vertical MFJ-1796

6 band vertical covers 40 through 6 meters. 12 feet tall with tiny 24-inch footprint. Mounts anywhere, handles 1500 Watts PEP.

### 40 - 2 m Mini-dipole MFJ-1775

1/2 Wave, 6-band rotatable mini-dipole. Just 14 feet wide, can be turned by a small TV-type rotator. Covers 40 through 2 meters, handles 1500 Watts.

## Longwire Antennas



### 80 - 10 m G5RV MFJ-1778

All-band G5RV antenna. 102 feet long, 32.5 foot ladder line ending in SO-239 connector for coax feedline. 1500 Watts. 80-10 m, 160 meters with tuner / ground.

### 40 - 10 m G5RV Junior MFJ-1778M

G5RV Junior. Half-size, 52 feet. Covers 40-10 meters.

## On-Glass Dual Band

### MFJ-1734

Dual band glass mount 144 / 70 cm antenna gives 2.6 dB gain on 2 meters and 6.3 dB gain on 70 cm. Low SWR on both bands.

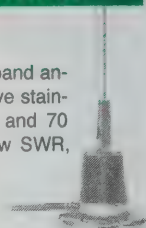
### MFJ-1738

2 meter glass-mount antenna handles 50 Watts with 2.6 dB gain, low SWR over entire 2 meter band.

## VHF / UHF Mobile

### MFJ-1724B

Mobile magnetic mount dual band antenna gives you a quarter wave stainless steel whip for 2 meters and 70 cm, coax, and connector. Low SWR, 200 Watts.



### MFJ-1729

Mobile Magnetic Mount super gain dual band antenna. Get a whopping 2.6 dB gain on 2 meters and 6.3 dB gain on 70 cm.

### MFJ-1432

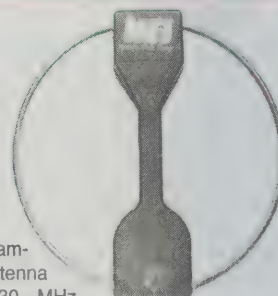
Dual band, 62.5" RuffRider™ hyper gain mobile antenna. 7.6 dB gain on 70 cm, 5 dB gain on 2 m. Requires tri-magnet mount, not included.

## 2 m + 6 m Mobile

### MFJ-1728B

Mobile magnetic mount 5/8 wave 2 meter and 1/4 wave 6 meter antenna. Low SWR, 300 Watts.

## Hi-Q Loop Antennas



### MFJ-1786

Tiny 36" diameter loop antenna operates 10-30 MHz continuously - including WARC bands! Ideal for apartments, small lots, motor homes, attics, etc. Handles 150 watts. MFJ's included remote control has Auto Band Selection™. Auto tunes to desired band, then beeps to let you know. No control cable needed. Fast / slow tune buttons, built-in two range cross-needle SWR / Wattmeter. All welded construction, large 1.050" diameter round radiator gives you highest possible efficiency. Heavy duty ABS plastic housing has ultraviolet protection.

MFJ-1788 Like MFJ-1786, 40 - 15 Meters.

# HT ANTENNAS

# MOBILE ANTENNAS

## Antennas for Handhelds

### PRYME®

Radio Products

### Dualband Rubber Duck

#### RD-8H

144 MHz / 440 MHz, flexible  
6.5" tall HT antenna, gold  
plated BNC connector.  
HRO Price \$14.95

RD-8H

## Wireless Antennas



### Wi-Fi / 802.11b Wireless LAN Antennas

NGC offers a wide selection  
of directional and omnidirectional  
antennas for Amateur  
Television, the ISM band,  
LAN / WAN, data links and  
wireless internet.

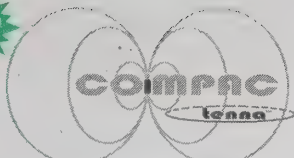
#### GP-24R

ATV/ISM band:  
2400-2500 MHz.  
Omnidirectional gain:  
15.4 dBi.  
Height: 5' 10".  
Connector: N-Type.  
HRO Price: \$149.95

#### GP-24-3R

Same as GP-24 but omnidirectional  
with 3 degree electrical downtilt.  
HRO Price: \$159.95

Check for  
Special  
Offers at  
[hamradio.com](http://hamradio.com)



COMPACTenna.com

COMPACTenna is a family of small antennas which  
require no tuning and a small ground plane yielding  
high performance. There are antennas for mobile al-  
lowing passage into garages and drive-thrus. There  
are models for home use that are perfect for condos  
and apartments.

### Mobile Antennas



The photo shows the 7" 2m/220/440 model on the  
left and the 9" Scan-III Government Bands on the  
right.

Model	Height	HRO Price
2m/220/440	7"	\$99.95
2m/440	7"	\$89.95
SCAN-III Govt	9"	\$114.95

### HamR-7 Series

**HAMR-7** - Covers the phone portion of  
40m 20m,10m,6m,2m,220, 440 bands.  
Small ground plane and 46" tall. A good  
choice for condominiums and apart-  
ments. Shown with a magnetic mount  
(not included). HRO Price \$379.95

**HAMR-7Digi** - Covers the lower por-  
tion of 40m 20m,10m,6m,2m,220, 440  
bands. Small ground plane and 46" tall.  
HRO Price \$379.95



**HAMR-7WARC** - Covers the 30m  
17m,12m,6m,2m,220, 440 bands. Small ground  
plane and 46" tall. HRO Price \$379.95

## 2 m / 70 cm Mobiles

### Austin

#### Dual-Band Mobile Antennas

Model	Band	Freq MHz	Gain	Weight oz	HRO Price
500C	2 m	144-148	Unity	6	\$45.95
	70 cm	440-450			
Metropolitan	2 m	144-148	Unity	6	\$58.95
	1.25 m	220-225			
	70 cm	440-450			

Find more dual-band antennas:



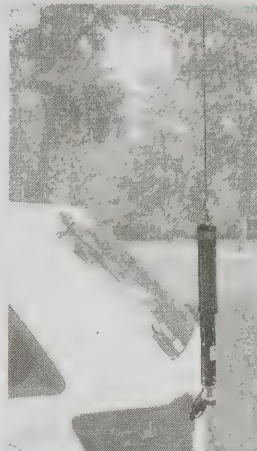
See Page 108



See Page 104

## Tarheel

### Mobile Antennas



< Little  
Tarheel II  
3.5 - 54 MHz

Baby  
Tarheel  
10 - 40 M

HRO Prices  
\$CALL

When properly installed on your vehicle the Little  
Tarheel II will provide continuous coverage from  
3.5 to 54 MHz with the supplied whip. Like all of  
our motorized antennas, this model meets the  
highest standards but in a smaller size.

It comes with sensors pre-installed so if you de-  
cide to add one of the auto controllers (SDC-100  
Simple Controller, SDC-102 Programmable Con-  
troller, Turbo Tuner, and Tunematic) now or later,  
everything is ready.

This antenna is for the person who wants to enjoy  
HF mobile with a more compact antenna. Don't  
let the small size fool you. The Little Tarheel II  
mounts higher on the vehicle so you have less  
ground loss and higher performance. Because  
of its smaller size, this antenna offers the conve-  
nience of a more common type of mount like the  
Diamond K400 Series, the Comet Series, or simi-  
lar 3/8" stud type mount.

The Little Tarheel II comes as a package. All you  
need is a mount and a nice HF radio. Included  
standard with the antenna is: the whip, 20 feet of  
plug and play control cable, manual control box,  
ferrite decoupling core and 3/8 x 24 stud.

The antenna is powder coated in standard colors  
of black, white, red or silver. It also comes with the  
tough Lexan™ Weather Shield like its big broth-  
ers. This model also uses the commercial 12 volt  
gear motor.

The antenna has a ONE YEAR NO MATTER  
WHAT WARRANTY to the original owner.

#### Specifications:

- Lower mast size: 1 1/2". Weight: 1.9 lbs.
- Lower mast length: 16".
- Whip length: 32".
- Total antenna length, 54 MHz position: 48".
- Total antenna length, 3.5 MHz position: 54".
- Continuous coverage: 3.5 - 54 MHz.
- Power rating: 200 Watts P.E.P.
- Typical SWR: 1.5 or less.

HRO Price \$CALL

## Low Noise 6-Meter Loop-Fed Arrays

Cushcraft's computer optimized third generation G0KSC Loop Fed Array (LFA) yagis are specifically designed for low noise – hear weak signals that others can't!

Highly suppressed side lobes eliminate unwanted noise and signal pickup from sides making your desired signal pop out!

See and hear for yourself how signals pop out from a low-noise G0KSC LFA as compared to a top performing yagi at [www.cushcraftamateur.com/LFA-6M5EL.php](http://www.cushcraftamateur.com/LFA-6M5EL.php)

Wide-spaced LFA yagis have lower SWR, higher gain, better front-to-back and are more broadband than dipole fed yagis.

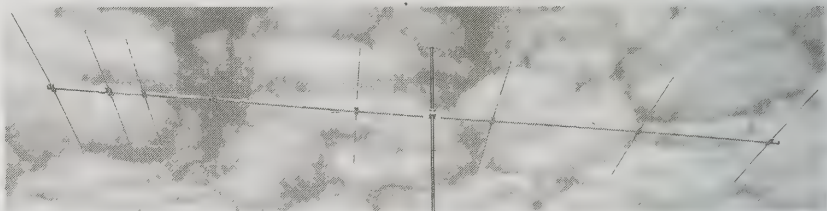
Cushcraft's direct 50-Ohm feed has no lossy matching network that limits power handling. These LFAs handle 5,000 Watts. Your actual operational power is limited by your coax, connectors and other accessories.

Cushcraft LFAs are also computer optimized for maximum mechanical strength using exceptionally strong tooling parts to give you years of reliable service.

All Cushcraft 6-Meter LFAs have heavy duty 2-inch diameter double-walled booms, 5/8" fully insulated elements, and 7/16" outer tip sections. Climb the tower only once!



**LFA-6M 4EL, \$229<sup>95</sup>**



**LFA-6M 7EL, \$539<sup>95</sup>**



**LFA-6M 8EL, \$649<sup>95</sup>**



**LFA-6M 5EL, \$319<sup>95</sup>**

### 6-Meter Antenna Performance

Model#	LFA-6M4EL	LFA-6M5EL	LFA-6M7EL	LFA-6M8EL
<b>Gain</b>	10.7 dBi@50.15	11.88dBi@50.15	13.5 dBi@50.15	14.09dBi@50.15
<b>F/B</b>	35.24 dB@50.15	27.35 dB@50.15	23.8 dB@50.15	23.81 dB@50.15
<b>Peak Gain</b>	10.76 dBi	11.91 dBi	13.5 dBi	14.15 dBi
<b>Peak F/B</b>	44.78 dB	28.01 dB	26.23 dB	26.27 dB
<b>Power Rating</b>	5kW*	5kW*	5kW*	5kW*
<b>SWR</b>	< 1.5:1 50-50.4	<1.5:1 50-50.3	<1.5:1 50-50.4	<1.5:1 50-50.4
<b>Stack Distance</b>	17.6 feet	20 feet	24 feet	26.6 feet
	recommended	recommended	recommended	recommended
<b>2 Stacked Gain</b>	13.59@17.6 ft.	14.78 dBi	16.28 dBi	16.94 dBi
<b>2 Stacked F/B</b>	25.04 dB	36.02 dB	25.19 dB	25.80 dB
<b>Boom Length</b>	13 feet	21 feet	33.6 feet	42 feet
<b>Weight</b>	8 lbs.	17 lbs.	37 lbs.	39 lbs.
<b>Turning Radius</b>	6' 11"	11' 4"	17' 8"	21' 4"
<b>Wind Loading</b>	TBA	TBA	TBA	TBA
<b>Wind Survival</b>	120 MPH	118 MPH	108 MPH	100 MPH

\*Power handling is limited only by operating station accessories such as coax.

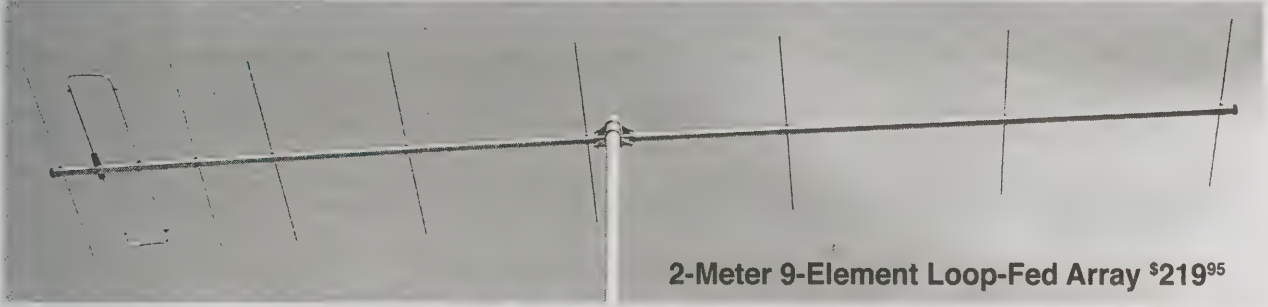
*See [www.cushcraftamateur.com](http://www.cushcraftamateur.com) for full specifications: SWR curves, patterns, gain, wind loading, wind survival, front-to-back, and more.*



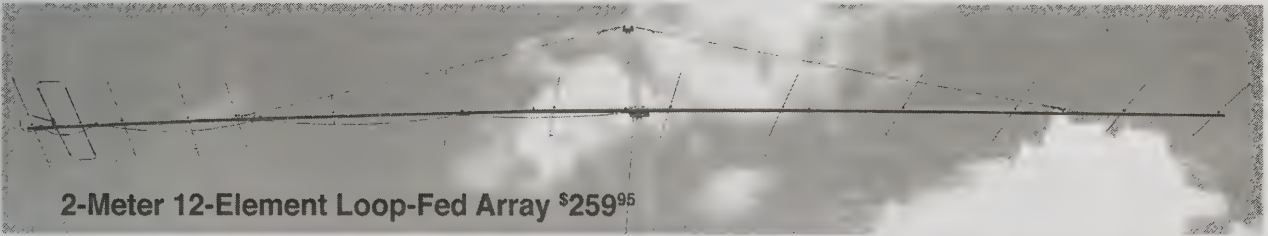
**CUSHCRAFT**  
COMMUNICATIONS ANTENNAS

# 2-METER ANTENNAS

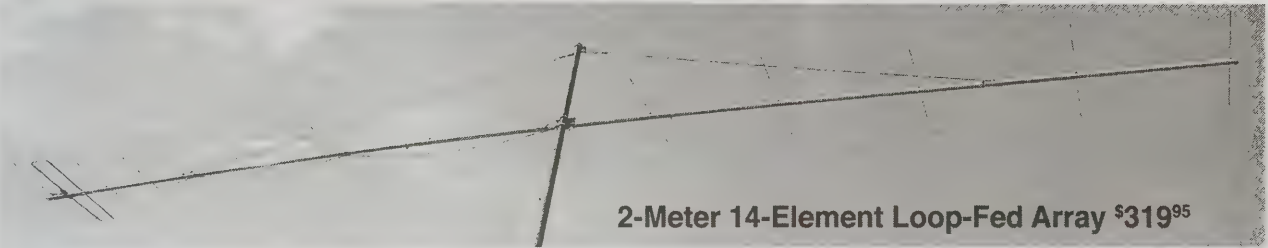
## Low Noise 2-Meter Loop-Fed Arrays



**2-Meter 9-Element Loop-Fed Array \$219<sup>95</sup>**



**2-Meter 12-Element Loop-Fed Array \$259<sup>95</sup>**



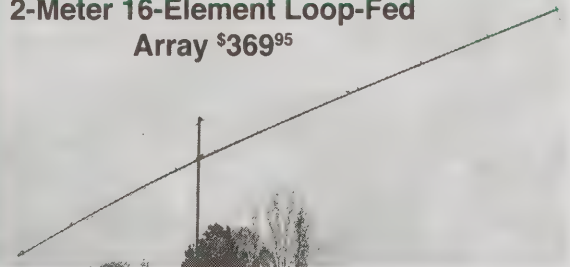
**2-Meter 14-Element Loop-Fed Array \$319<sup>95</sup>**

### 2-Meter Antenna Performance

Model #	LFA-2M 9#L	LFA-2M 12EL	LFA-2M 14EL	LFA-2M 16EL***
Gain @ 144.1 MHz	14.04 dBi	15.79 dBi	16.56 dBi	17.25 dBi
Gain @ 144.3 MHz	14.06 dBi	15.80 dBi	16.10 dBi	17.27 dBi
F/B @ 144.1 MHz	26.39 dB	30.52 dB	31.26 dB	33.47 dB
F/B @ 144.3 MHz	25.20 dB	28.73 dB	33.86 dB	37.53 dB
Peak Gain	14.09 dBi	15.82 dBi	16.64 dBi	17.3 dBi
Peak F/B	26.67 dB	30.53 dB	34.21 dB	38.02 dB
Power Rating	3 kW*	3 kW*	3 kW*	3 kW*
SWR	<1.1:1 148.600 to 145.200 MHz	<1.1:1 143.700 to 145.900 MHz	<1.1:1 143.900 to 144.800 MHz	<1.12:1 144.000 to 144.900 MHz
Boom Length	14.5 feet	23 feet	28 feet	35 feet
Weight	7.74 lbs	9.75 lbs	11.75 lbs	19.27 lbs
Turning Radius	7.36 feet	11.7 feet	14.06 feet	18.12 feet
Wind Loading	1.03 sq feet	1.64 sq feet	2.07 sq feet	2.5 sq feet
Wind Survival	173 MPH**	109 MPH**	83 MPH**	92 MPH**
Stack Distance Vertical	7-10 feet	7-10 feet	7-10 feet	7-10 feet
Stack Distance Horizontal	7-10 feet	7-10 feet	7-10 feet	7-10 feet
2 Stacked Vertical @ 144.3 MHz	16.97 dBi	18.56 dBi	19.39 dBi	20.18 dBi
2 Stacked Horizon @ 144.3 MHz	16.93 dBi	18.51 dBi	19.38 dBi	20.15 dBi
4 Stacked Vertical @ 144.3 MHz	20.06 dBi	21.74 dBi	22.06 dBi	23.18 dBi
Sky Temp @ 144.1 MHz	239.3 K	221.0 K	214.9 K	213.4 K
G/T Figure @ 144.1 MHz	-3.73 dB	-1.70 dB	-0.85 dB	-0.12 dB

**All our LFA's are  
SUPER LOW NOISE  
HEAVY DUTY  
Large diameter booms  
Rated to 5 kW+**

### 2-Meter 16-Element Loop-Fed Array \$369<sup>95</sup>



\*Power handling is limited only by operating station accessories such as coax.

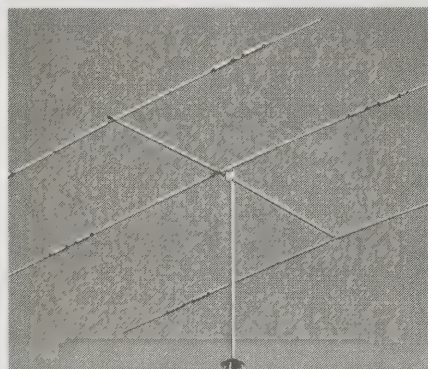
\*\*Other options available if higher wind loading/survivability is required.

\*\*\*LFA-2M 16EL requires a 1:1 choke balun.



## A4S

4-element tri-band (10 / 15 / 20 m) beam on an 18 ft boom, handles full legal power limit. A true high-performance tribander with precisely tuned high power traps, carefully selected element lengths, and proper spacing. High gain, low SWR, and wide bandwidth makes this a premium antenna choice. **A744** adds on 30/40m.



## A3S

Classic 3-element tri-band (10 / 15 / 20 m) beam on a 14 ft boom, handles full legal power limit. Construction features included pinned boom sections, heavy duty element clamps with backing plates, and all stainless steel hardware. High power traps are still hand-made and individually tuned. A proven performer! **A743** adds 30 / 40m.



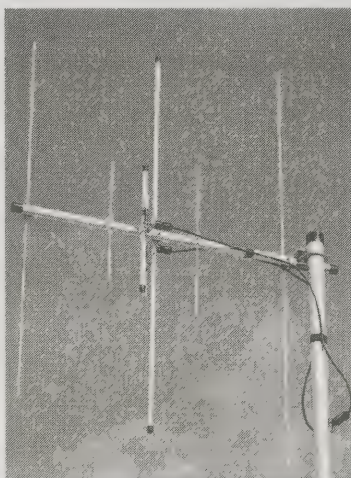
## A3WS

3-element 12 / 17 Meter beam on a 14 ft boom with all the same construction characteristics of the A3S. Add the optional **A103** for 30m.



## MA-5B

5-band beam in a compact 26 lb package! Automatic band switching, easy installation, handles 1500 Watts on a 7 ft 3 inch boom with less than 9 ft of turning radius. Impressive side rejection and front-to-back ratio makes this a great performing HF antenna.



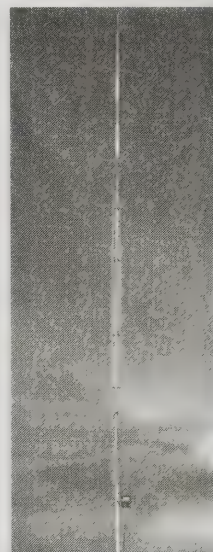
## A270-6S

Increase the range of your dual-band base station with a dual-band yagi. Eliminate an extra feed line, and realize extra gain for your FM digital modes. Pre-tuned 3 elements per band. Assembles in a snap. **A270-10S** pre-tuned 5 elements per band for even better point-to-point communications.

**Call Toll Free  
for Quotes  
on Cushcraft  
Antennas**

## R9

6-80 meter vertical requires no radials! 1500 W SSB / CW, no antenna tuner needed. Easy to assemble, low profile. Rugged construction. Thick fiberglass insulators, all stainless-steel hardware. 31.5 ft tall, 25 lbs. Mounts to 1.25 - 2 inch mast. 4 sq ft wind surface.



## R8

6-40 Meter Vertical requires no radials. Optional R-8TB tilt base and R-8GK three-point guy kit.



## RINGOS

**AR-2 (2 m) / AR6 (6m) / AR10 (10 m)** Ringos have been around forever. These compact, FM verticals are broad banded, lightning protected, extremely rugged, economical, electrically bullet-proof, low-angle, and they work!



**CUSHCRAFT**  
COMMUNICATIONS ANTENNAS

# BASE ANTENNAS

## Cushcraft HF Antennas

Model	Bands	Ele	Fwd Gain dBi	Max F/B dB	Min SWR	Boom Length		Boom Diameter		Longest Ele(Ht)		Turning Radius		Max Mast Dia		Wind Surf Area		Shipping Weight	
						FT	M	IN	CM	FT	M	FT	M	IN	CM	SQFT	SQMT	LBS	KG
MA-5B	10 12 15 17 20 meters	3	5.3 10m 1.0 12 m 4.8 15m 1.0 17m 3.6 20m	22	1.2:1	7.3	2.2	1.5	3.8	17.5	5.3	8.8	2.7	1 1/2	3.8	3.22	0.3	26.5	12
MA-5VA	10,12,15,17,20 m	1	1-2		1.2:1					14.7	4.48							6.5	2.95
MA-6VA	6, 10,12,15,17,20 m	1	1-2		1.2:1					14.7	4.48							6.5	2.95
R6000	20 - 10 + 6 meters	1	3		<1.2:1					19	8.7			13/4	4.4	1.5	0.14	12.5	5.6
R8	40 30 20 17 15 12 10 6m	1	3		<1.3:1					28	7.3							23	10.5
A3S	20 15 10 meters	3	8	25	<1.2:1	14	4.3	1.5	3.8	27.8	8.5	15.5	4.7	2	5.1	4.4	0.41	30	13.6
A743 Kit	40m for A3				<1.2:1					35	10.7	15.5	4.7	2	5.1	0.06	0.06	7	3.2
A3WS	17 12 meters	3	8	25	<1.2:1	14	4.3	1.5	3.8	25	7.6	14.4	4.4	2	5.1	4.1	0.38	26.5	12
A103 Kit	30m for A3WS				<1.2:1					32	9.8	14.4	4.4	2	5.1	0.04	0.04	6	2.7
A4S	20 15 10 meters	4	8.9	25	<1.2:1	18	5.5	2	5.1	32	9.8	18.4	5.6	2	5.1	5.5	0.51	38	17.2
A744 Kit	40m for A4S				<1.2:1					35	10.7	18.4	5.6	2	5.1	0.3	0.03	7.5	3.4
TEN-3	10 meters	3	8	25	<1.2:1	8	2.4	1.4	3.5	18	5.5	9.8	3	2	5.1	2	0.19	10.5	4.8
XM240	40 meters	2	6	25	1.1:1	22	6.7	2.5	6.3	43	13.1	24.3	7.4	2.5	6.35	5.5	0.51	59	26.8
D3	20 15 10 meters	1			<1.2:1					26	7.9	4	1.2	2	5.1	0.9	0.08	11	5
D3W	17 12 meters	1			<1.2:1					34	10.4	5	1.5	2	5.1	0.9	0.08	13	5.9
D4	40 20 15 10 meters	1			<1.2:1					36	11	5.5	1.7	2	5.1	1.3	0.12	15.5	7
D40	40 meters	1			<1.2:1					42	12.8	6.5	2	2	5.1	1.7	0.16	15	6.8
AR-10	10 meters	1	3		<1.2:1					17.6	5.4			1 1/4	3.2	12/3	0.16	5	2.3

*Due to rapidly increasing raw material and transportation costs, call for availability and pricing.*

## Cushcraft VHF / UHF Antennas

Model	Frequency Coverage	Ele	FWD Gain dBi	Max F/B dB	Conn	Polarization		Boom Length		Longest Ele(Ht)		Turning Radius		Max Mast Dia		Wind Surf Area		Shipping Weight		HRO Price
						HORZ	VERT	FT	M	FT	M	FT	M	IN	CM	SQFT	SQMT	LBS	KG	
A13B2	144-148	13	15.8	26	U	Y	Y	15	4.6	3.4	1	8.9	2.7	2	5.1	1.8	0.17	9.5	4.3	\$289.95
A17B2	144-145	17	18	26	N	Y	N	31	9.4	3.4	1	17.3	5.3	2	5.1	3.9	0.36	18	8.2	\$389.95
224WB	222-225	4	10.2	24	U	Y	Y	3	0.09	2.2	0.7	3	0.9	2	5.1	0.23	0.02	2.5	1.1	\$124.95
A50-3S	50-54	3	8	20	U	Y	N	6	1.8	9.8	3	6	1.8	2	5.1	1.8	0.17	8.5	3.9	\$159.95
A50-5S	50-54	5	10.5	24	U	Y	N	12	3.7	9.8	3	7.5	2.3	2	5.1	2.7	0.25	13	5.9	\$219.95
A50-8S	50-54	8	11.8	26	U	Y	N	20	6.1	9.8	3	11	3.4	2	5.1	4.5	0.42	22	10	\$389.95
A148-3S	144-148	3	7.8	25	U	Y	Y	2.8	0.9	3.3	1	2.8	0.9	2	5.1	0.27	0.03	3	1.4	\$84.95
A148-10S	144-148	10	13.2	24	U	Y	Y	12	3.7	3.3	1	6	1.8	2	5.1	1.2	0.11	6	2.7	\$169.95
A148-20T	144-148	20	13	20	U	Y	Y	10.8	3.3	3.3	1	6.8	2.1	1.5	3.8	1.4	0.13	7.5	3.4	\$239.95
A448-8S	440-450	8	10.5	18	U	Y	Y	2.9	0.09	1.1	0.3	2.9	0.9	2	5.1	0.3	0.03	2.5	1.1	\$94.95
A430-11S	430-440	11		20	U	Y	Y	4.2	1.3	1.1	0.3	2.8	0.9	2	5.1	0.39	0.04	3.5	1.6	\$139.95
A448-11S	440-450	11	13.2	20	U	Y	Y	4.2	1.3	1.1	0.3	2.8	0.9	2	5.1	0.39	0.04	3.5	1.6	\$139.95
AR270	144-148	1	3		U		Y			3.75	1.13			2	5.1	0.27	0.03	2	0.9	\$139.95
	430-450	1	5.5		U		Y													
AR270B	144-148	1	5.5		U		Y			7.7	2.3			2	5.1	0.47	0.044	2.4	1.09	\$199.95
	430-450	1	7.5		U		Y													
A270-6S	144-148	3	7.8	20	U	Y	Y	2.8	0.09	3.4	1	2.8	0.9	2	5.1	0.3	0.03	3.5	1.6	\$140.95
	430-450	3	7.8	18	U															
A270-10S	144-148	5	10	20	U	Y	Y	6.2	1.9	3.4	1	6.2	1.9	2	5.1	0.73	0.07	5	2.3	\$189.95
	440-450	5	10	18	U															
A8270-13S	6m,2m,70cm	5	8 6m 10 2m 10 70cm	20	U	Y	Y	8.8	2.56	9.7	3	6.16	1.87	2	5.1	2.52	0.23	9.5	4.3	\$309.95
AR-6	50-54		3		U	N	Y			10.1	3.1			1.25	3.2	0.37	0.03	4	1.8	\$119.95
AR-2	135-160		3		U	N	Y			3.9	1.2			1.25	3.2	0.21	0.02	2	0.9	\$74.95
AR-450	440-480		3		U	N	Y			1.4	0.42			0.75	0.88	0.1	0.01	2	0.8	\$64.95
ARX-2	137-160				U	N	Y			9.3	2.8			1.25	3.2	0.33	0.03	2.5	1.1	\$94.95
ARX-2B	134-164		7		U	N	Y			14	4.3			1.25	3.2	0.5	0.05	3.5	1.6	\$134.95
ARX-220B	220-225		7		U	N	Y			9.3	2.8			1.25	3.2	0.3	0.03	3	1.4	\$139.95
ARX-450B	435-450		7		U	N	Y			5	1.5			1	1.5	0.2	0.02	2	0.9	\$119.95

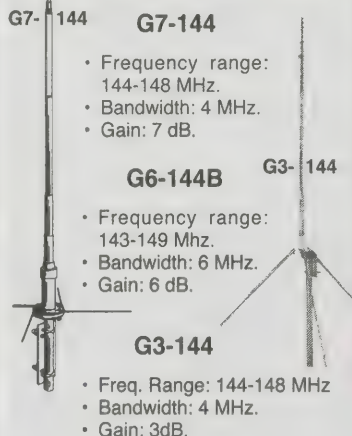


Hustler delivers reliability and performance Beyond Your Expectations!

## VHF / UHF Base Antennas

### 2m Verticals

These easy-to-assemble verticals are made of aluminum and high-strength fiberglass. When disassembled the longest part is about 4'. Choose 3, 6, or 7 dB gain and the overall length that best suits your application.



- Frequency range: 144-148 MHz.
- Bandwidth: 4 MHz.
- Gain: 7 dB.

- Frequency range: 143-149 MHz.
- Bandwidth: 6 MHz.
- Gain: 6 dB.

- Freq. Range: 144-148 MHz
- Bandwidth: 4 MHz.
- Gain: 3dB.

### 220 & 440 Verticals

#### G7-220

The G7-220 is of similar design and construction as the G7-144.

- Freq. Range: 220-225 MHz.
- Bandwidth: 5 MHz.
- Construction: High strength fiberglass and aluminum.
- Gain: 7 dB.

#### G6-440

The G6-440 is of similar design and construction as the G6-270R.

- Frequency range: 440-450 MHz.
- Bandwidth: 10 MHz.
- Construction: One piece radome.
- Gain: 6 dB.

## Repeater Antennas

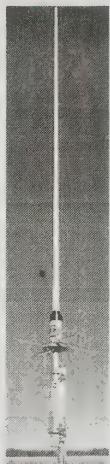
### The Spirit Series

Hustler's omnidirectional, collinear design base station antennas are enclosed in a rugged fiberglass radome that will help minimize pattern variations due to high winds or extreme conditions. Models are available for 144, 220, 440, 900 MHz, and 1.2 GHz. The gain will be unity, 3, 6, 9, or 12 dB depending on the frequency.

Call HRO for quotes on custom frequencies.

### 2m / 70 cm Dual Band

#### G6-270R Dual band 2 m / 70 cm



The G6-270R is a combination G6-144B and G6-440. It is factory tuned for quick and easy installation.

- Frequency range: 144-148 MHz / 435-445 MHz.
- Gain: 6 dB.
- Bandwidth: 4 MHz - 2 m / 10 MHz - 70 cm.
- One piece radome.
- VSWR: < 1.5:1 @ resonance.

## HF Base Antennas

### HF Multi-band

6-BTV  
10, 15, 20, 30, 40, 75 / 80 m

5-BTV  
10, 15, 20, 40, 75 / 80 m

4-BTV  
10, 15, 20, 40 m

- Broadbanded, low VSWR at band edges.
- Power capability - full legal limit on SSB or CW.
- Solid one-inch fiberglass trap forms for optimum electrical and mechanical stability.
- Heavy wall, high strength aluminum tubing, heavy duty aluminum mounting bracket and low loss, high strength insulators.
- Stainless steel clamps and hardware.
- Easy assembly and tuning.
- Single line feed with any length of 50 ohm coax used as ground mount with or without radials, or elevated mount with radials.
- All the BTV's can be mounted in a piece of PVC and disguised as a flagpole in deed restricted neighborhoods.



5-BTV

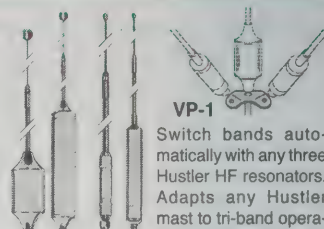
#### Model 30-MTK

30 meter add on kit for the 4 and 5-BTV

# BASE ANTENNAS

## HF Resonators

Customize your HF mobile system with Hustler products. Resonators may be used separately on one of the masts or up to three at a time with the VP-1. Add the QD-2, springs and mounts as needed for your installation.



VP-1

Switch bands automatically with any three Hustler HF resonators. Adapts any Hustler mast to tri-band operation automatically.

## Hustler HF Resonators

Model	Type	Band	Power SSB	Bandwidth 2:1 SWR	Weight lbs
RM-10	Standard	10 m	400 W	150-250 KHz	0.41
RM-11	Standard	11 m	400 W	150-250 KHz	0.41
RM-12	Standard	12 m	400 W	90-120 KHz	0.41
RM-15	Standard	15 m	400 W	100-150 KHz	0.42
RM-17	Standard	17 m	400 W	120-150 KHz	0.44
RM-20	Standard	20 m	400 W	80-100 KHz	0.46
RM-30	Standard	30 m	400 W	50-60 KHz	0.84
RM-40	Standard	40 m	400 W	40-50 KHz	0.84
RM-60	Standard	60 m	400 W		
RM-75	Standard	75 m	400 W	25-30 KHz	1.05
RM-80	Standard	80 m	400 W	25-30 KHz	1.05
RM-10-S	Super	10 m	1 kW	250-400 KHz	1
RM-15-S	Super	15 m	1 kW	150-200 KHz	1.2
RM-20-S	Super	20 m	1 kW	100-150 KHz	1.25
RM-40-S	Super	40 m	1 kW	50-80 KHz	1.8
RM-75-S	Super	75 m	1 kW	50-60 KHz	2.1
RM-80-S	Super	80 m	1 kW	50-60 KHz	2.1

## Hustler Base Antennas

Model	Band	Gain	Connector	Height ft(m)
G7-144	2 m	7 dB	N Female	16.3 (4.6)
G6-144B	2 m	6 dB	SO-239	9.8 (2.9)
G3-144	2 m	3 dB	SO-239	7.5 (2.3)
G7-220	1.25 m	7 dB	N Female	10.2 (3.0)
G6-440	70 cm	6 dB	N Female	7.3 (2.2)
G6-270R	2 m / 70 cm	6 dB	N Female	7.6 (2.3)
6-BTV	10-30-80 m			24.0 (7.2)
5-BTV	10 to 80 m			25.0 (7.5)
4-BTV	10-40 m			21.4 (8.4)

## Hustler VHF / UHF Mobile Antennas

Model	Band	Gain	Power	Mount
LMC-270	2 m/70 cm	2.4/4	100	NMO
MX-270	2 m/70 cm	2.4/4	100	Mag
LMG-144	2 m	3.4	200	NMO
BBG-144	2 m	3.4	200	NMO
BBG-440-5	70 cm	5	200	NMO
BBGT-144	2 m	3.4	200	Trunk
MX-220	1.25 m	3.4	200	Mag
MX-2B	2 m	3.4	200	Mag
MX-440B	70 cm	3.4	200	Mag
SF-2	2 m	3.4	100	3/8X24
SF-220	1.25 m	3.4	100	3/8X24
RX-2	2 m	3.4	100	Mag
RX-220	1.25 m	3.4	100	Mag
RX-440	70 cm	5	100	Mag
CG-144	2 m	5.2	200	3/8X24
CG-220	1.25 m	5.2	200	3/8X24
CGT-144	2 m	5.2	200	Trunk
CGT-220	1.25 m	5.2	200	Trunk
THF	140-500	Unity	200	Trunk
UGM	140-500	Unity	25	Mag

# MOBILE ANTENNAS / MOUNTS

## VHF / UHF Mobile Antennas

### Dual Band

Dual band models for 144 / 440 MHz give you 2.4 dB / 4 dB gain. The antennas are rated at 100 Watts.

#### LMC-270

- NMO style coil
- Chrome top
- Coil and whip only

#### MX-270

- Chrome top.
- NMO style magnetic mount.
- 17 ft RG58/U coax.
- PL-259 connector.

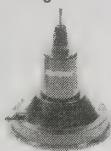


### Magnetic Mounts

Models for 144, 220 and 440 MHz are power rated for 200 Watts. Each has an NMO-style coil and a magnetic mount.

- MX-2** 144 MHz 3.4 dB gain
- MX-220** 220 MHz 3.4 dB gain
- MX-440** 440 MHz 3.4 dB gain

- Chrome top.
- 10 oz magnet.
- 17 ft RG58/U coax.
- PL-259 connector.



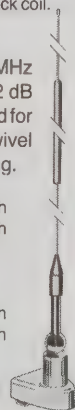
- MX-2B** 144 MHz 3.4 dB
- MX-440B** 440 MHz 3.4 dB
- Same as above but all black coil.

### Collinear

Collinear models for 144 MHz and 220 MHz provide 5.2 dB gain. They are power rated for 200 Watts. All have a swivel ball for vertical positioning.

- CG-144** 6 MHz bandwidth
- CG-220** 4 MHz bandwidth
- 3/8"x24 thread
- 5/8 over 1/4wave.

- CGT-144** 6 MHz bandwidth
- CGT-220** 4 MHz bandwidth
- Trunk mount base.
- 17 ft RG58/U coax.
- PL-259 connector.



### Unity Gain

An antenna to custom trim as needed for VHF or UHF frequencies. Covers 140-500 MHz.

- THF** Trunk Lip Mount

- UGM** Magnet Mount



### Coil and Whip

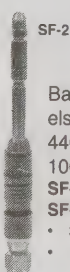
Models for 144 or 440 MHz are power rated for 200 Watts. NMO-style coil on each requires an NMO mount.

- LMG-144** 3.4 dB gain
- Chrome top and bottom.
- Contact- silver plated push pin.

- BBG-144** 3.4 dB gain

- BBG-440-5** 5.0 dB gain
- Chrome top, swivel ball and spring.

- BBGT-144** 3.4 dB gain
- Includes trunk mount.
- 17 ft RG58/U coax.
- PL-259 connector.

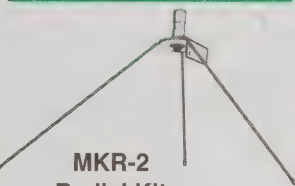


### 5/8 Wave

Base-loaded 5/8 wave models for 144 MHz, 220 MHz and 440 MHz are power rated for 100 Watts.

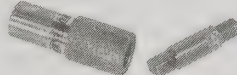
- SF-2** 144 MHz 3.4 dB gain
- SF-220** 220 MHz 3.4 dB gain
- 3/8" x 24 thread.
- Mount to any Hustler mount.

- RX-2** 144 MHz 3.4 dB gain
- RX-220** 220 MHz 3.4 dB gain
- RX-440** 440 MHz 5.0 dB gain
- 3 oz magnetic mount.
- 15 ft RG-58/U coax.
- PL-259 connector.



### MKR-2 Radial Kit

Used to convert RX Series, SF Series, & CG Series to fixed station operation. Contains three radials. Mount can accept any 3/8 x 24 threaded mount.

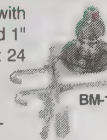


### QD-2 Quick Disconnect

Remove antennas easily with a push and twist release. Compression design of 100% stainless steel. 3/8 x 24 threads.

## Mobile Mounts

- BM-1** Bumper mount with stainless steel strap and 1" diameter ball with 3/8 x 24 threads.



- MBM** Powerful 5" diameter magnet with 3/8 x 24 threads. 16' of RG58U coax with PL-259 connector.

MBM

- SSM-1** Heavy duty ball mount with 4" stainless steel spring with copper braided center conductor to prevent detuning. 180 degree adjustable 2" diameter stainless steel ball. Accepts 3/8 x 24 antennas.



SSM-1

- SSM-2** Heavy duty 2" diameter stainless steel ball mount. 180 degree adjustable. Accepts 3/8 x 24 antennas.

- SSM-3** Heavy duty stainless steel 4" spring with 3/8 x 24 coupling stud. Copper braided center conductor to prevent detuning.



C-32

- C-32** Chrome plated 1" ball mount. Accepts 3/8 x 24 antennas.

- C-29** Stainless steel 4" spring. Copper braided center conductor to prevent detuning. Accepts 3/8 x 24 antennas.

- C-30** Chrome plated 4" spring. Copper braided center conductor to prevent detuning.



C-30

- RSS-2** Stainless steel 3" spring. Used for mobile antennas between resonator and mast. Copper braided center conductor to prevent detuning. Accepts 3/8 x 24 antennas.



- HLM** Trunk lip mount designed for hatch and slanted back vehicles. 180 degree 1" diameter ball, which accepts 3/8 x 24 antennas. RG58U coax with PL-259 connector.



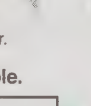
- HOT** Trunk lip mount with easy off/on with thumb knob. 180 degree 1" diameter ball, which accepts 3/8 x 24 antennas. RG58U coax with PL-259 connector.



- TLM** Trunk lip mount which accepts 3/8 x 24 antennas. RG58U coax with PL-259 connector.



- RVM** Recreational vehicle mount with heavy duty bracket. Easy antenna removal or lay down with thumb knob. 1" ball accepts 3/8 x 24 antennas. RG58U coax with PL-259 connector.



All mounts below are supplied with 17" RG-58U cable.



CHMB



CMMA



CTMA

Model	Description
CHMA	3/8" Hole mount without connector
CHMA-B	3/8" Hole mount w/crimp-on BNC
CHMA-P	3/8" Hole mount w/crimp-on PL-259
CHMB	3/4" Hole mount without connector
CHMB-B	3/4" Hole mount w/crimp-on BNC
CHMB-P	3/4" Hole mount w/crimp-on PL-259
CMMA	NMO 10 oz mag w/solder-on PL-259
CTMA	Trunk mount without connector
CTMA-P	Trunk mount w/crimp-on mini UHF

## Mobile Masts

### Fold-Over Masts

#### MO-1

Mobile mast 54" high for bumper, fender or hitch mounting. Folds over at 15" above base. 3/8 x 24 threaded.

#### MO-2

Mobile mast 54" high for bumper, fender or hitch mounting. Folds over at 27" above base. 3/8 x 24 threaded.



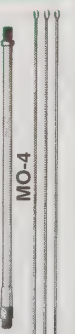
### Solid Masts

#### MO-3

Mobile mast 54" high for bumper, fender or hitch mounting. Solid aluminum with white vinyl coating. 3/8 x 24 threaded.

#### MO-4

Mobile mast 22" high for trunk or deck mounting. Three retuning tip rods included. 3/8 x 24 threaded.



# SWL / SCANNER

# HF / HT ANTENNAS

## Log Periodic



CLP5130-1

The CLP5130 antennas are high gain, wide band VHF/UHF log periodic beams for horizontally polarized base station use. Covers amateur bands from 50-1300 MHz, FM broadcasting, scanning, VHF / UHF TV, air band communications, government and business bands.

Forward gain is 10 to 12 dB - 10 to 16 times the gain of a nondirectional discone type antenna. The VSWR is less than 2.0:1 across the band. The high-quality aluminum antennas have a boom design that allows movement of the phasing line. Distortions in the vertical and horizontal planes are minimized and element adjustment is not necessary. The boom-to-mast bracket is made of a lightweight and rugged magnesium alloy.

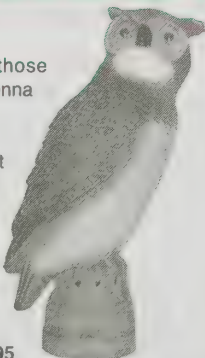
## Create Antennas

	CLP 5130-1	CLP 5130-2
Frequency	50-1300 MHz	108-1300 MHz
No. Elements	23	19
Power PEP	500W	500W
Forward Gain	10-12 dBi	10-12 dBi
Front/Back	15 db	15 db
Longest element	9' 10"	4' 6"
Boom length	5' 9"	4' 6"
HRO Price	\$459.95	\$369.95

## The Owl

Want to keep those birds off your antenna system?

The OWL is just the trick. Mount this fella on top of your tower and the birds will stay away.



HRO Price \$19.95

## Discone Antennas



**MFJ**

MFJ-1868

Ultra wide-band antenna receives 25-1300 MHz. Perfect for scanners. Transmit 50-1300 MHz. Handles 200 W. Ideal for 2 / 6 meters, 220 / 440 MHz. Includes SO-239 connector, 50' coax, stainless steel elements and mounting hardware. **HRO Price \$79.95**

**DIAMOND  
ANTENNA**

D-130J / D-130NJ

## Super Wideband Discone

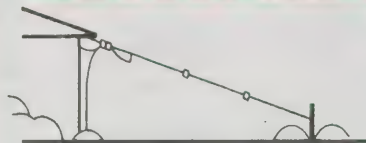
Monitor 25-1300MHz. Transmit on 50, 144, 430, 1200 MHz. All stainless steel. Input power 200 Watts maximum. Impedance: 50 ohms. VSWR: 1.5:1. Length: 1.7 meters. Mounts on 1" to 2" masts. D-130 UHF and D-130NJ Type-N connector.

**HRO Prices: D-130J \$94.95, D-130NJ \$95.95**



## SWL Antennas

**ALPHA DELTA**



## DX-SWL

The DX-SWL is tuned for the most popular SWL bands (13, 16, 18, 19, 21, 25, 31, 41, 49, 90 and 120 meters). It can be used as a multi-band transmit antenna with the appropriate antenna tuner. Length is 60 feet. Requires a single support. Standard coax connects antenna to your radio. Feed point is 50 ohms. SO-239 connection. **HRO Price \$129.95**

## DX-SWL-S

Requires only a single elevated support 25' or higher. DX-SWL-S Frequency Coverage: 90 MTRS (3.2-3.5 MHz) 60 MTRS (4.75-5.0 MHz) 49 MTRS (5.95-6.2 MHz) 41 MTRS (7.1-7.3 MHz) 31 MTRS (9.5-9.9 MHz) 25 MTRS (11.65-12.05 MHz) 21 MTRS (13.6-13.8 MHz) 19 MTRS (15.1-15.6 MHz) 16 MTRS (17.55-17.9 MHz) 13 MTRS (21.45-21.85 MHz) This antenna is a "no-trap" design using the same components and "ISO-RES" coil design as used in other Alpha Delta designs. Includes insulators, support rope and static electricity protector. Antenna is only 40 feet long.

**HRO Price \$119.95**

**DIAMOND  
ANTENNA**

## HV7A Mobile Antenna System

For New HF / VHF Transceivers

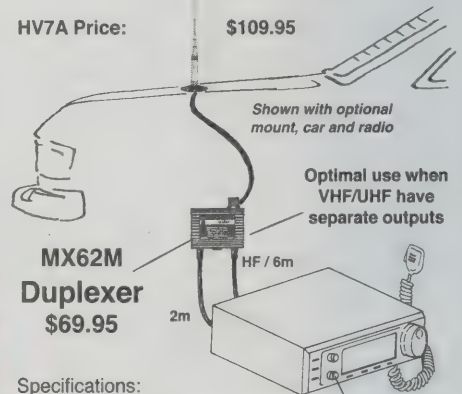
(such as: IC706, IC7000,

FT100, FT857, FT897 and the FT8900R)

Five band capability: 70 cm, 2 m, 6 m and 2 HF bands through use of loading coils. Fold-over feature allows for easy access into low overhead buildings.

Bands Supplied: 10 m / 6 m / 2 m / 70 cm  
Opt. Loading Coils: 40 m / 20 m / 17 m / 15 m  
Power, P.E.P.: HF 120 W / VHF 200 W  
Mount Connection: UHF  
Length: 54" (HV7A)  
SWR: 1.5:1 nominal

**HV7A Price: \$109.95**



**MX62M  
Duplexer  
\$69.95**

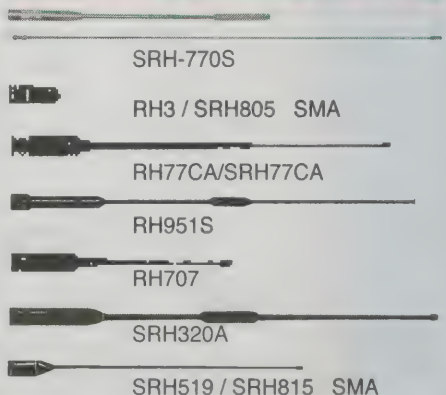
- Specifications:
- HF / 6 m, 2 m, 70 cm duplexer.
  - 1.6-56 MHz LPF
  - 76-470 MHz HPF
  - (76-120 receive only)
  - Watts: 600 P.E.P.
  - Loss: .2 dB LPF  
.3 dB HPF
  - Isolation: 50 dB

Use with HF/ VHF mobile transceivers such as the IC-706 series, FT-100 or combine 2 m and HF rigs.

## Optional Loading Coils

HVC14 20 m \$37.95  
HVC18 17 m \$37.95  
HVC21 15 m \$37.95

## Antennas for Handhelds



SRH-770S

RH3 / SRH805 SMA

RH77CA/SRH77CA

RH951S

RH707

SRH320A

SRH519 / SRH815 SMA

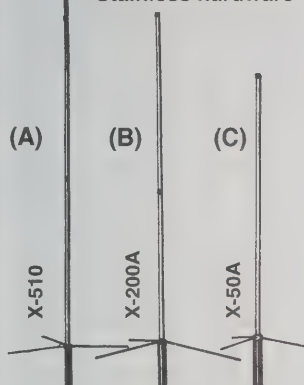
# ANTENNAS

## The Standard by Which All Others are Judged

### Diamond Base Antennas\*

All base antennas grounded for lightning protection. Factory adjusted for American amateur bands; no tuning required.

- Wide-band performance
- Highest gain
- Fiberglass radome
- Factory adjusted
- DC grounded
- UPS shippable
- High wind rating
- Stainless hardware



1. 52-54 MHz only. DPGH62 is adjustable from 50-54 MHz.
2. 28/50 MHz 400 W PEP, 14/21 MHz 400 W PEP, 7 MHz 200 W PEP.

Model	Bands	Gain, dBi	Watts	Con. Type	WT (lbs)	Lth (ft)	MPH (no ice)	Fig	HRO Price
A502HB	6m Yag 2 elem.	6.3 dBi	400PEP	UHF	3.75	2.6			\$89.95
A144S5	2 m Yagi 5 elem.	6.0 dBi	100PEP	UHF	1.4	3.1			\$59.95
A430S10	70cm Yagi 10 elem.	13 dBi	100PEP	UHF	1.4	3.6			\$69.95
A430S15	70cm Yagi 15 elem.	14.8 dBi	100PEP	UHF	2.15	7.4			\$89.95
CP-22E	2 m	6.5	200	UHF	3	9	90	B	\$54.95
CP-5HS <sup>2</sup>	40/20/15/10/6 m		200v	UHF	6.6	11.75	80		\$379.95
CP-62	6m	5.5 dBi	200	UHF	9	22	80		\$199.95
CP-610	10m/6m	5.5/3.4 dBi	200	UHF	9	22	80		\$229.95
F-22A	2 m	6.7	200	UHF	5	10.5	112	B	\$94.95
F-23H	144-174 tunable	7.8	350	UHF	5	15	90	A	\$149.95
F-718	70 cm	11.5	250	N	5	15	90	A	\$199.95
MG-200	2.4 GHz	11		N	3	6	135	C	\$59.95
V2000A <sup>1</sup>	6m / 2m / 70cm	2.1 / 6.2 / 8.4	150	UHF	4	8.3	110	B	\$159.95
X-30A	2 m / 70 cm	3.0 / 5.5	150	UHF	2	4.5	135		\$69.95
X-50A	2 m / 70 cm	4.5 / 7.2	200	UHF	3	5.6	135	C	\$99.95
X-50NA	2 m / 70 cm	4.5 / 7.2	200	N	3	5.6	135	C	\$99.95
X-200A	2 m / 70 cm	6.0 / 8.0	200	UHF	4	8.3	112	B	\$124.95
X-300A	2 m / 70 cm	6.5 / 9.0	200	UHF	4	10	112		\$139.95
X-300NA	2 m / 70 cm	6.5 / 9.0	200	N	4	10	112	B	\$139.95
X-510HDM	2 m / 70 cm	8.3 / 11.7	330/250	UHF	5	17.2	90	A	\$179.95
X-510HDN	2 m / 70 cm	8.3 / 11.7	330/250	N	5	17.2	90	A	\$179.95
X-510NJ	144/430	8.3 / 11.7	200	N	5	17.2	90	A	\$199.95
X-6000A	2m / 70 / 23cm	6.5 / 9.0 / 10.0	100	N	5	10	112	B	\$169.95
BB7V	2-30 MHz		250	UHF	6	5/22	80		\$369.95
CP6AR	75/40/15/10/6 m		200	UHF	9.9	15.1	80		\$419.95

\* Most longer base antennas require additional freight. This applies to ALL Diamond Base Antennas.

## Diamond Handheld and Receiving Antennas

Model	Description	HRO Price
D-130J	Wideband discone 25-1500 MHz. 20 W transmit 50-1300MHz. 100 W 144-3000 MHz No cable.	\$94.95
D-130NJ	Wideband discone 25-1500 MHz. 20 W transmit 50-1300 MHz. 100 W 144-1300 MHz. No cable. Type-N	\$95.95
D-3000N	Wideband discone RX 25-3000MHz, TX 50-1300MHz 20 W 50 MHz. 20 W transmit 50 MHz. 100 W 144-1300 MHz. 87" tall, Type N	\$129.95
RH-3	2m / 70cm dual-band HT antenna. 1.75" BNC. 120-900 MHz receive.	\$26.95
RH-77CA	High gain 2m / 70cm dual-band HT antenna. Receive range to 900 MHz. BNC.	\$22.95
RHF-10	144/440. Air Band 6W. Rec Only 150/300/450/800/900MHz. BNC	\$21.95
RHF-40	Super flexible version of Model RH-77CA	\$27.95
SRHF-40	Super flexible 15" tall SMA 144 / 440MHz HT antenna	\$26.95
RH-205	2m HT antenna, telescopic, 5/8 fully extended, 47.5"; 1/4 retracted, 9".	\$26.95
RH-519	2m / 70cm slim dual-band HT antenna. Flexible. 8" BNC, 10 watts.	\$24.95
RH-707	2m / 70cm dual-band, tiltable whip HT antenna. 8-1/4" BNC.	\$29.95
SRHF10	Ht Antenna, 144/440MHz. Air Band 6W, SMA, Rec Only 150/300/450/800/900M	\$21.95
SRJF-10	144/440 MHz, Air Band 150/300/450/800/900 MHz(Rec. Only). 2.75". 6W, SMA(F) 1/4 wave length	\$21.95
SRH-519	2m / 70cm slim dual-band HT antenna. Flexible. 8" SMA, 10 watts.	\$26.95
SRH-77CA	High gain 2m/70cm dual-band flexible HT antenna, SMA	\$22.95
SRH-770S	2m/70cm, 10W max, SMA-P, 2m 3/8 wave 2.15dBi, 70cm 3/4 wave 4.5dBi	\$34.95
SRJ-77CA	Same as SRH-77CA for Wouxun, SMA	\$24.95
SRH-229	For Ailinc DJ-G29T. High gain, flexible whip, 13", 220-900 MHz, 10W, 4dB, SMA	\$32.95
SRH-320A	2m/1-1/4m/70cm tri-band HT antenna. Flexible. SMA. 10 watts	\$46.95
SRH-789	Telescoping handheld antenna 95-1100 MHz, 6 sections, folds at base	\$32.95
RH-789	Same as SRH-789 but BNC connector	\$32.95
SRH-805	2m / 70cm / 23cm tri-band HT antenna. 1.75" SMA. 10 watts.	\$26.95
SRH-815	2m / 70cm / 23cm tri-band HT antenna. Flexible. 8" SMA, 6 watts.	\$31.95
SRH-940	6m / 2m / 440 MHz SMA HT antenna	\$39.95
SRH-999	6m / 2m / 70cm / 23cm quad-band HT antenna. Flexible. 21 1/4" SMA, 10 watts.	\$54.95

## Specialty Antennas

### High Power 2 m / 70 cm Mobile

Dual-band mobile antenna. 300 Watts (2 m) and 250 Watts (70 cm). Use K400 and K600 series mounts. **NR7900A HRO Price \$84.95**

### Quad Band FM

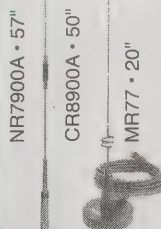
10 m / 6 m / 2 m / 70 cm quad FM band antenna for FT8900R radio or multi radio applications. Use K400 and K600 series mounts. **CR8900A HRO Price \$99.95**

### 2m / 70cm Mobile

Ideal antenna for increased performance of HT radio or where a compact antenna is required. Magnetic mount base. 1/4 wave (2 m) and 1/2 wave (70 cm), black finish. Available in UHF or SMA cable configuration. **MR77 / MR77SMA HRO Price \$37.95**

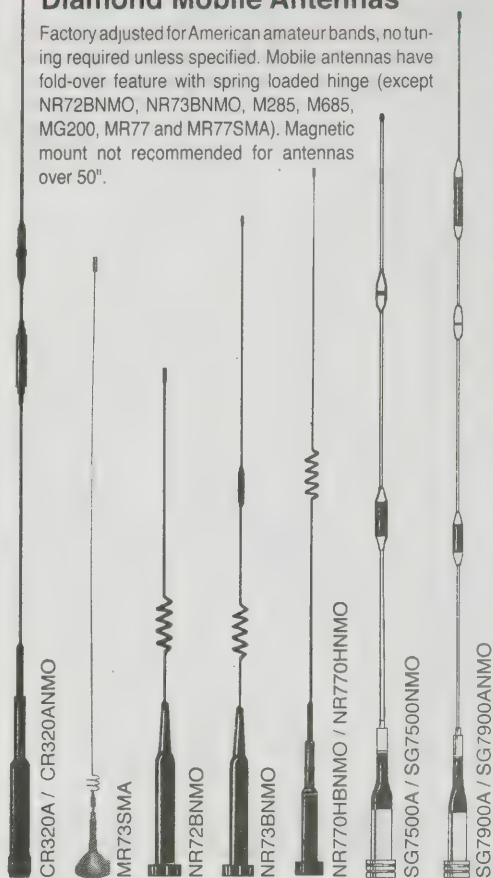
### 2 m / 70 cm Mobile

**NR-770HRKS HRO Price \$109.95**



## Diamond Mobile Antennas

Factory adjusted for American amateur bands, no tuning required unless specified. Mobile antennas have fold-over feature with spring loaded hinge (except NR72BNMO, NR73BNMO, M285, M685, MG200, MR77 and MR77SMA). Magnetic mount not recommended for antennas over 50".



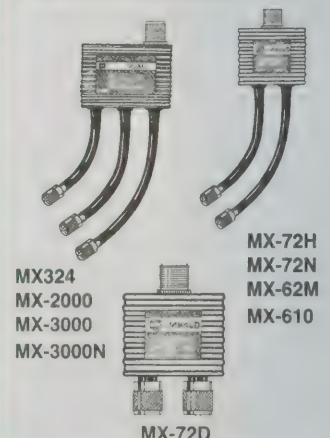
# ANTENNAS & DUPLEXERS

Model	Bands	Gain/dB	Watts	Mount	Lth/In	HRO Price
AZ504SP	2m/70cm	2.15 dBi	50	UHF	15.5	\$39.95
AZ507RSP	2m/70cm	2.15(2m) 4.9(70cm)	50	UHF	27.5	\$46.95
CR320A <sup>4,5,6</sup>	2 m/1 - 1/4 m/70cm	2.1/3.8/5.5	100	UHF	36	\$79.95
CR320BNMO <sup>4,5,6</sup>	2 m/1 - 1/4 m/70cm	2.1/3.8/5.5	100	NMO	36	\$79.95
CR627B <sup>4,5,6</sup>	6m/2m/70cm	2.1/4.5/7.2	150	UHF	60	\$84.95
CR627BNMO <sup>4,5,6</sup>	6m/2m/70cm	2.1/4.5/7.2	150	NMO	60	\$84.95
CR8900A <sup>4,5,6,7,8,9</sup>	10m/6m/2m/70cm	2.15(2m) 5.5(70cm)	60	UHF	50	\$99.95
D220 discone	100-1600 MHz	2	50	PL-259	35.5	\$109.95
MG200 <sup>7</sup>	2.4 GHz	7	-	N	23.6	\$59.95
HF6FX <sup>4,7</sup>	0 m	2.15	250	UHF	44	\$69.95
HF50CX <sup>4,7</sup>	0 m	3.5	200	UHF	71	\$99.95
M285 <sup>4,8</sup>	2 m	3.4	200	UHF	52.4	\$31.95
M285SNMO <sup>4,8</sup>	2 m	3.4	200	NMO	52.4	\$31.95
MR73S Mag Mt	2m/70cm	2.15/3.4	10	SMA	20	\$26.95
MR73SJ Mag Mt	2m/70cm	2/3.4	10	SMA	20	\$26.95
MR75S Mag Mt	2 m/70 cm	2.15/3.4	35	SMA	20	\$36.95
MR75SJ Mag Mt	2 m/70 cm	2/2.4	35	SMA	20	\$36.95
MR77 <sup>4,7</sup>	2 m/70 cm	2.15/3.4	70	†	20	\$37.95
MR77SMA <sup>4,7</sup>	2m/70cm	2.15/3.4	70	&	20	\$37.95
MR77SJ Mag Mt	2m/70cm	2.15/3.4	70	SMA	20	\$37.95
M685S <sup>4,7</sup>	6 m	2.15	200	UHF	52.4	\$31.95
M685SNMO <sup>4,7</sup>	6 m	2.15 dBi	200	NMO	52.4	\$31.95
NR124	23 cm	8.4	100	Type N	25	\$49.95
NR124NMO	23 cm	8.4	100	NMO	25	\$54.95
NR140BNMO	220 MHz	4	159	NMO	36.2	\$46.95
NR22L <sup>4</sup>	2 m	6.5	100	UHF	96.8	\$64.95
NR2000NA	2 m/70 cm/23 cm	3.15/6.3/9.7	100	N	39	\$84.95
NR-72BNMO <sup>4,5,7</sup>	2 m/70 cm	2.1/2.1	100	NMO	14	\$39.95
NR-73BNMO <sup>4</sup>	2 m/70 cm	2.1/5.3	100	NMO	33	\$54.95
NR-770HA	2 m/70 cm	3.0/5.5	200	UHF	40	\$48.95
NR-770HBNMO	2 m/70 cm	3.0/5.5	200	NMO	41	\$53.95
NR-770HB <sup>4</sup>	2 m/70 cm	3.0/5.5	200	UHF	40	\$53.95
NR-770HBNMO <sup>4</sup>	2 m/70 cm	3.0/5.5	200	NMO	41	\$53.95
NR-770HRKS <sup>4</sup>	2 m/70 cm	3.0/5.5	200	UHF	40.2	\$109.95
NR-7900 <sup>4</sup>	2 m/70 cm	3.7/6.4	300/250	UHF	57	\$84.95
SD330 screwdriver	3-30 MHz	-	200	UHF	73	\$389.95
SG7000A <sup>4,7</sup>	2 m/70 cm	2.1/3.8	100	UHF	18	\$69.95
SG7500A	2 m/70 cm	3.5/6.0	150	UHF	41	\$69.95
SG7500NMO	2 m/70 cm	3.5/6.0	150	NMO	42	\$72.95
SG7900A <sup>4</sup>	2 m/70 cm	5.0/7.6	150	UHF	60	\$99.95
SG7900A/NMO <sup>4</sup>	2 m/70 cm	5.0/7.6	150	NMO	62	\$114.95

## Diamond Duplexers and Triplexers

Model	Port	Freq MHz	CW Watts	PEP Watts	Loss dB	Isol. dB	MIX Conn.	Port Conn.	HRO Price
MX-37	LPF HPF	1.6 - 470 900 - 1300		100 50	.25 .45	45 45	N-Jack(F)	PL-259/12" cable N-Male / 12" cable	\$59.95
MX-62M	LPF HPF	1.6 - 56 76 - 470		200 200	.2 .2	50 50	SO-239	PL-259/12" cable 259/12" cable	\$69.95
MX-72D	Similar to MX-72H, but Direct Connection								\$46.95
MX-72H	LPF HPF	1.6-30 140-150 400-460	400 150 100	400 150 100	.1 .1 .2	60 60 60	SO-239	PL-259/12" cable 259/12" cable	\$49.95
MX-72N	Similar to MX-72H, but type-N on UHF port								\$49.95
MX-72A	Similar to MX-72N, but type-N on MIX Conn.								\$54.95
MX-214	LPF HPF	140-150 220 - 225		300 200	.3 .4	40 40	SO-239	PL-259/12" cable 259/12" cable	\$65.95
MX-324	LPF BPF HPF	1.6-150 220-225 400-550		800 600 500	.3 .4 .4	40 40 40	SO-239	PL-259/12" cable 259/12" cable 259/12" cable	\$89.95
MX-610	LPF HPF	1.3 - 30 49 - 470		600 500	.2 .25	45 45	SO-239	PL-259/12" cable 259/12" cable	\$69.95
MX-2000	LPF BPF HPF	1.6-60 110-170 300-950		800 800 500	.15 .20 .25	60 60 60	SO-239	PL-259/12" cable 259/12" cable 259/12" cable	\$83.95
MX-3000	LPF BPF HPF	1.6-160 350-500 850-1300		800 400 200	.15 .25 .30	55 55 55	N-Jack(F)	PL-259/12" cable 259/12" cable N-male/12" cable	\$79.95
MX-3000N	Similar to MX3000, but with Type-N male on BPF connection								\$85.95

- # Black anodized finish.
- † Mag mount with 13' RG58 cable w/UHF.
- & Mag Mt w/13' RG58 cable w/SMA.
- 4 Magnetic mounts not recommended. Vehicle ground required.
- 5 52-54 MHz only.
- 6 100 Watts on 1-1/4 m; 200 Watts on 2 m and 70 cm.
- 7 Gain Rated in dBi.
- 8 Tunable from 144-174 MHz.
- 9 Black with adhesive-backed mount.



# ACCESSORIES & MOUNTS

## Special Trunk Mount

for 3/8 x 24 thread antennas

K400-3/8C

HRO Price \$73.95

Here's the ideal mounting system for Outbacker Perth, OB Jr., and other medium weight antennas. A spring is recommended for stiff or heavy antennas.

Power: 350 Watts RMS

Cable: 6 1/2' RG316

Teflon® coax

Connector: PL-259

Adjustment: 2 axis

**Note:** Use C110, 10-foot extension for front radio installation.

\$19.95

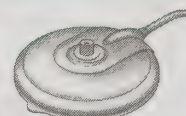


## Diamond Accessories

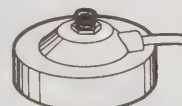
Model	Description	HRO Price
SP-1000	Lightning Protector DC-1000 MHz, Max Power 400 W PEP, SO-239, VSWR <1.2	\$29.95
SP-1000PW	Lightning Protector DC-1000 MHz, Max Power 400 W PEP, SO-239(F), SO-239(M), VSWR <1.2	\$34.95
SP-3000P	Lightning Protector DC-3000 MHz, Max Power 400 W PEP, Type-N(F), Type-N(M), VSWR <1.2 Waterproof	\$41.95
SP-3000W	Lightning Protector DC-3000 MHz, Max Power 200 W PEP, Type-N, VSWR <1.2 Waterproof	\$41.95
MGC-50	Window feedthru assembly, HF-50 MHz 50 W, 2 m 40 W, 440 MHz 30 W, 1200 Hz 10 W, SO-239	\$53.95
CX-210A	Heavy duty wideband coax switch, DC-1000 MHz. 1.5 kW, UHF(F) to UHF(M) Waterproof	\$49.95
CX-210N	Heavy duty wideband coax switch, DC-1500 MHz. 1.5 kW, N connector.	\$79.95
CX-310A	Heavy duty 3 position coax switch, wideband. DC-800 MHz. SO-239 connectors.	\$89.95
DL-30A	Dummy load. DC-500 MHz, 15 W RMS (max)/100 W peak. PL-259 connector.	\$39.95
DL-30N	Dummy load. DC-1500 MHz, 15 W RMS (max)/100 W peak. Type N connector.	\$54.95
D38-24	UHF to 3/8-24 Adapter	\$19.95
SS-770R	Phasing Harness, 114 MHz, 430 MHz, Input SO-239, Output x2 PL-259	\$74.95

## Mobile Mounts

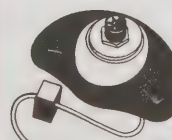
Model	Description	HRO Price
C101	UHF base 6.5' RG316 Teflon coax w/PL259	\$37.95
C101NMO	NMO base 6.5' RG316 Teflon coax w/PL259	\$37.95
C101-3/8C	Replacement cable only for K400-3/8C	\$34.95
C101-3/8C Kit	Replacement cable and hardware for K400-3/8C	\$44.95
C104SMA	4' RG58/U Extension cable for PL-259. 90 degree SMA Male & SO-239	\$16.95
C105SMA	5' RG58/U Extension cable for C101/C101NMO. 90 degree SMA Male	\$16.95
C110BNC	10' RG316 extension cable for C101/C101NMO. Use front radio installations. BNC male	\$29.95
C110SMA	10' RG316 extension cable for C101/C101NMO. Use front radio installations. SMA male	\$29.95
C110	10' mini-8/RG8X extension cable for C101/C101NMO. Use front radio installations.	\$19.95
C211	Combination of C101 and C110. 16.5 feet cable assembly	\$49.95
C213S	UHF base, 13.5' RG316 Teflon Coax with PL-259	\$44.95
C213SNMO	NMO base, 13.5' RG316 Teflon Coax with PL-259	\$45.95
CRM	Stainless steel right angle mount with U-bolt	\$16.95
DPK-4NM-N	Type N Magnet. 13' 5mm coax w/Type-N plug. Good to 1300 MHz.	\$54.95
HRKS	Adhesive backed UHF mount, 13.5' RG316 teflon coax with SMA and PL-259 adapter	\$69.95
K400-3/8C	Special mount for 3/8x24 thread Antenna. 6.5 feet RG316 w/PL-259	\$73.95
K400C	Deluxe mount with UHF type base. 6.5 feet RG-316 Teflon coax w/PL-259	\$73.95
K400CNMO	Deluxe mount with NMO type base. 6.5 feet RG316 Teflon coax w/PL-259	\$73.95
K400S	Deluxe mount with UHF type base. 13.5 feet RG316 w/SMA (PL259 adapter included)	\$79.95
K400SNMO	Deluxe mount with NMO type base. 13.5 feet RG316 w/SMA (PL259 adapter included)	\$79.95
K412C	Trunk/hatchback mount. UHF base, 6.5' Teflon coax w/PL-259. 45" max ant	\$59.95
K412CNMO	Trunk/hatchback mount. NMO base, 6.5' Teflon coax w/PL-259. 45" max ant	\$59.95
K412S	Trunk / hatchback mt. UHF base, 13.5' RG316 coax w/SMA. (PL259 adapter included)	\$69.95
K412SNMO	Trunk / hatchback mt. NMO base, 13.5' RG316 coax w/SMA. (PL259 adapter included)	\$69.95
K515S	Deluxe luggage carrier mt. UHF base. 13.5 feet RG316 w/SMA (PL259 adapter included)	\$69.95
K515SNMO	Deluxe luggage carrier mt. NMO base. 13.5 feet RG316 w/SMA (PL259 adapter included)	\$69.95
K540KM	Deluxe Mirror/Luggage rack mount. Black, adjustable. 13' RG58C/U w PL259	\$59.95
K550KM	Deluxe mini van luggage rack mount. Black, adjustable. 13' RG58C/U w PL259	\$69.95
K550L	Oversize version of K550	\$46.95
K600M	Tilt angle (0-9 degrees) trunk mount. Black. RG-188 and low loss 7 mm cable.	\$59.95
K600S	Tilt angle (0-9 degrees) trunk mt UHF base. 13.5 feet RG316 w/SMA (PL259 adapter inc.)	\$62.95
K702M	Deluxe low-profile magnet/suction mount. 6.5" diameter, 13' RG58 & PL-259	\$49.95
K9000LRM	Motorized mount for luggage rack. Use C-series cable assemblies	\$119.95
K9000LRMO	Same with oversize K515 hardware	\$119.95
K9000TM	Motorized mount for trunk lid. Use C-series cable assemblies	\$119.95
SPM35	UHF type base on heavy 1.5 lb/4" magnetic, 13' 5mm coax with PL-259.	\$44.95
SPMNMO	NMO type base on heavy 1.5 lb/4" magnet, 13' 5mm coax with PL-259	\$49.95



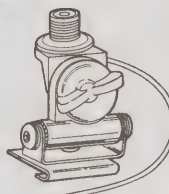
K702M



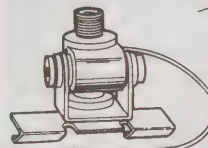
SPM35  
SPMNMO  
DPK4NM-N



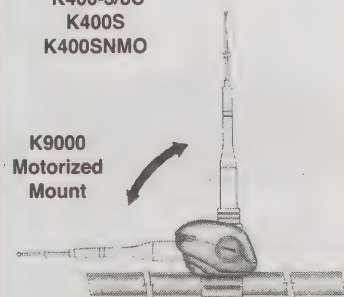
K600M  
K600S



K412CNMO  
K412SNMO  
K412C  
K412S



K400C  
K400CNMO  
K400-3/8C  
K400S  
K400SNMO



K9000  
Motorized  
Mount

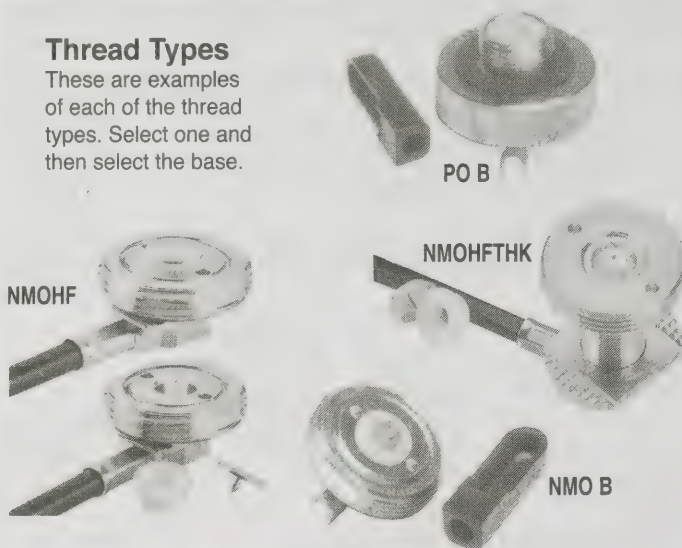
9. Use C110 for front radio installations

### Choosing Your Larsen Mobile Antenna

Choose your antenna configuration based on the frequency, base type (e.g., magnetic mount) and thread type (e.g., NMO). Keep in mind that it is necessary to select a base with the same mounting style as the antenna. Typical bases and styles are shown below.

#### Thread Types

These are examples of each of the thread types. Select one and then select the base.



#### Mount Configurations

In addition to the popular Motorola 3/4" (NMO) mounts shown here, mobile antennas for the Larsen mount (LM) and PO mount (PO) are excellent choices for amateur use. Each of these mounts comes in one of the thread types.

Mounts:

NMO K premium quality rooftop.

NMO MMR mag mount, 80# pull strength.

NMO TLP heavy duty trunk lid.

NMO TMB electropolished trunk gutter bracket.

NMO HF for low or high frequencies (pull center pin and insulator for high frequencies).

NMO HFTHK NMO thick mount (surfaces to 1/2" thick) high or low frequencies.



#### Magnetic Mount BNC MM BNC

Connectors: BNC on the mag and coax. Coax: RG 58 A/U, 12'

### NMO Series Antennas

#### Select an Antenna

Once the base and thread type are selected, the final step is to choose the antenna.

All Larsen mobile antennas meet the industry's most demanding specs for electrical efficiency and mechanical durability.

Gain antennas are made of a coil and a whip. Quarter wave antennas are just a whip.

- Colors: Black coil base; chrome or all black whip.
- 1-year No-Nonsense Warranty.<sup>™</sup>
- Made in USA

### Scanner Antenna

#### Tri-Band Antenna NMO-

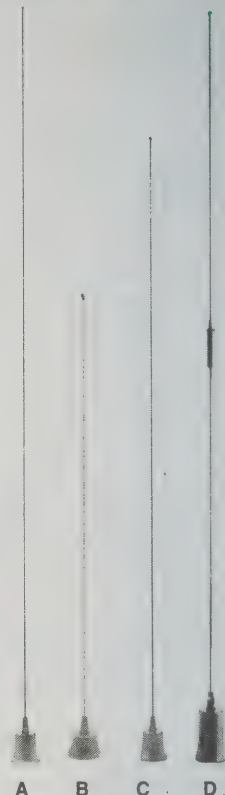
150 / 450 / 800

This is a great antenna for scanner operation. It is NOT tunable for amateur operation.

Frequency.... 150-165 /  
..... 450-470 /  
..... 806-940 MHz  
Gain .. 2.14 dBi ± 1 dB  
Mount.....NMO  
Height.....16.5"



Call a  
Helpful  
Ham at  
HRO for  
Quotes  
on Larsen  
Antennas



**A** NMO 150 B (2 m)  
Frequency:.....144-174 MHz  
Gain:.....3 dB  
Electrical:..... 5/8 Wave  
Height:.....49"

**B** NMOQ C  
Frequency:.....144-448 MHz  
Gain:.....Unity  
Electrical:..... 1/4 Wave  
Height:.....22" max.

**C** NMO 220 B (1.25 m)  
Frequency:.....220-225 MHz  
Gain:.....3 dB  
Electrical:..... 5/8 Wave  
Height:.....32"

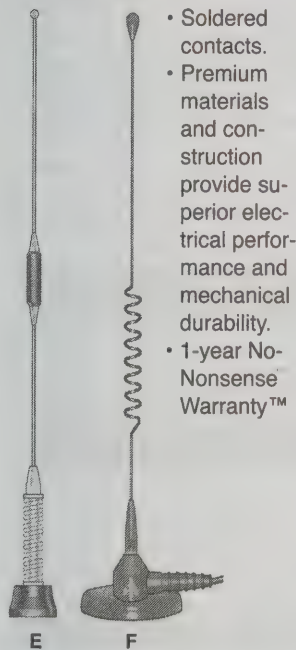
**D** NMO 2 / 70  
Frequency:.....144-148 MHz  
.....442-448 MHz  
Gain:..3.8 dBi VHF 5.2 dBi UHF  
Electrical:..center loaded 1/2  
wave VHF  
Collinear UHF  
Height:.....34 3/4"

# MOBILE ANTENNAS

## Dual-Band Antennas

Larsen dual band antennas provide excellent performance on 2 m and 70 cm. Each antenna is factory preset to guarantee optimal performance with no tuning required.

- A range of dual band configurations is available.
- Kulrod copper-plated 17-7 stainless steel rods for greater transmit range.



**E NMO 2 / 70 SH**  
Frequency: 144-148/440-450 MHz  
Gain: .....Unity  
Power: .....100 Watts  
Type: VHF: Center load 1/4 wave  
..... UHF: Center load 3/4 wave  
Base: NMO UHF base B w/spring  
Height: .....17"

**F MM 2 / 70 PL**  
Frequency: 144-148/440-450 MHz  
Gain: .....Unity  
Power: .....100 Watts  
Coax: RG58 A/U Dual Shield, 12'  
Pull strength: .....54 lbs.  
Type: VHF: Center load 1/4 wave  
..... UHF: Center load 3/4 wave  
Base: 3" round magnet mount  
Connector: PL 259 installed  
Weight: .....1 lb.  
Height: .....17"

## On-Glass Antennas

Larsen's advanced design techniques in glass-mount antennas result in superior transmit range plus tremendous mechanical durability. Glass mount performance is nearly identical to rooftop mounts, with no holes to drill. Properly installed on-glass antennas grip for years under demanding conditions, yet are easy to remove and remount.

### Dual Band

The KG 2 / 70 is a VHF half-wave and a UHF collinear. It comes with 14 feet of RG-58/U coax.

The antenna installs easily on any flat surface. Remove the whip without tools for car washes or low garages.

### Dual Band

**G KG 2/70-CX-PL**  
Frequency: 144-148 / 442-448 MHz  
Gain: 2.4 dB VHF; 4.5 UHF  
Power: 50 Watts  
Type: 1/2 wave / Collinear  
Connector: PL 259 (loose)  
Height: 32-3/4"

- Patented low-impedance design is electrically efficient.
- Single-band antennas are pre-cut, 1/2 wave design.
- Transformer outside vehicle.
- Copper plated whips.
- Rated 50 Watts output.
- Less than .5 dB loss through glass vs. rooftop.
- New circuit board technology locks in solid state performance.
- 3M's best on-glass adhesive grip.
- Made in USA with 1 year No-Nonsense Warranty™



### 2 m Single Band

**H KG 144 PL**  
Frequency: 144-160 MHz  
Gain: .....2.4 dB  
Type: .....1/2 Wave  
Connector: PL 259 (loose)  
Height: .....45"

**Ask About  
Free  
Shipping**

## In-Building Public Safety Antennas



### PSIBVHF 132-174 MHz

#### Features.

- Wide bandwidth VHF 132-174 MHz operation.
- Aesthetically pleasing: 1.5 mm (0.060 inch) thickness to ceiling.
- VSWR < 2:1.
- Optimized to low-frequency in-building environments.
- 15 x 15 inch (380 x 380 mm).

#### Applications

- In-building repeater systems.
- Bi-directional amplifier.
- Police, fire, government.
- Low profile ceiling mounting.
- Enhanced for in-building: gain-set to IB environment; multi-floor coverage; avoids the nulls of traditional dipoles.



*Installed antenna fits flush with ceiling.*



### PSIBVHF 132-174 / 380-570 / 700-960 MHz

#### Features

- Wide bandwidth VHF, UHF 132-174 MHz, 380-570 MHz, 700-960 MHz.
- Aesthetically pleasing: 1.5 mm (0.060 inch) thickness to ceiling.
- VSWR < 2:1.
- Optimized to low-frequency in-building environments.

#### Applications

- In-building repeater systems.
- Bi-directional amplifier.
- Police, fire, government.
- Low profile ceiling mounting.
- Enhanced for in-building: modest gain; multi-floor coverage; avoids the nulls of traditional dipoles.

## Comet Dual-Band Antennas

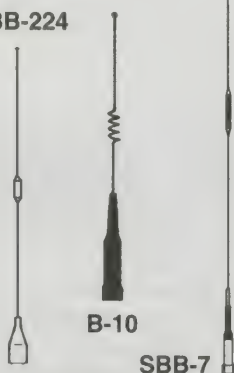


### Dual- & Tri-band VHF / UHF

Comet developed the Super Linear Converter (SLC) to increase actual gain of dual and triband antennas.

- A complete pre-formed phasing coil and phosphorus copper element eliminate additional components and gain loss.
- The SLC is electrically very efficient, providing a low angle of radiation, directly to the horizon.
- Comet sectional antennas use ABS (Transparent to RF) connecting joints for the finest pattern and easiest assembly.

### SBB-224



MODEL	BANDS	GAIN	MAX PWR Watts	CONN	WGT Lbs' oz"	LEN FT' In"	MAX Wind Speed MPH	HRO Price
<b>Dual Band Base Station Repeater Antennas</b>								
GP-9*	2m/70cm	8.5/11.9	200	SO-239	5'11"	16'6"	90	\$214.95
GP-9N*	2m/70cm	8.5/11.9	200	N	5'11"	16'6"	90	\$209.95
GP-6*	2m/70cm	6.5/9.0	200	SO-239	3'8"	10'5"	90	\$149.95
GP-3*	2m/70cm	4.5/7.2	200	SO-239	2'12"	5'11"	112	\$99.95
GP-1	2m/70cm	3.0/6.0	200	SO-239	2'	4'2"	135	\$74.95
<b>Dual Band Mobile Antennas - All Black Anodized</b>								
SBB-7/SBB-7NMO	2m/70cm	4.5/7.0	70	PL/NMO	-	4'7"	-	\$79.95
SBB-5/SBB-5NMO	2m/70cm	3.0/5.5	120	PL/NMO	-	3'2"	-	\$58.95
SBB-2/SBB-2NMO	2m/70cm	2.15/3.8	60	PL/NMO	-	20"	-	\$42.95
B-10M / B10NMO	2m/70cm	-2.15	50	PL/NMO	-	12"	-	\$42.95

\* some longer antennas require additional freight

## Comet Tri-Band Antennas

MODEL	BANDS	GAIN	Max Pwr Watts	CONN	WGT Lbs' oz"	LEN FT' In"	Max Wind Speed MPH	HRO Price
<b>TriBand Base Station Repeater Antennas</b>								
GP-15 #	6m/2m/70cm	3/6.2/8.6	200	SO-239	2'15"	7'11"	90	\$169.95
GP-98 #	2m/70cm/23cm	6.5/9.0/13.5	100	N-Female	3'6"	9'4"	90+	\$189.95
CX-333 #	2m/220/70cm	6.5/7.8/9.0	120	SO-239	3'10"	10'2"	112	\$169.95
<b>TriBand Mobile Antennas</b>								
SBB-15 #	6m/2m/70cm	2.15/4.5/7.2	120	PL-259	-	4'10"	-	\$84.95
SBB-97	2m/70cm/23cm	3.0/6.8/9.6	100	N-Male	-	3'3"	-	\$84.95
SBB-224	2m/220/70cm	2.15/3.2/5.5	150	PL-259	-	3'1"	-	\$69.95
SBB-224NMO	2m/220/70cm	2.15/3.2/5.5	150	NMO	-	3'1"	-	\$69.95
<b>HF Antennas</b>								
UHV-6 #	40/(20*)/(17*)15/10/6/2m/70cm	HF 0 dBi 2m 2.15 dBi 70cm 5.5 dBi	120 SSB HF 100W FM 6-70cm	PL-259	MAX 1'4"	MAX 6'4"	-	\$169.95
*L-14	Opt 20m coil for UHV-6						-	\$31.95
*L-18	Opt 17m coil for UHV-6						-	\$29.95
*L-3.5	Opt 75/80m coil for UHV-6						-	\$34.95
CHA-250B #	Ground Plane 3.5-57 MHz		150W SSB HF 125W CW	SO-239	7'11"	23'8"	67.5	\$389.95

\* For the UHV-6 optional bands.

# some longer antennas require additional freight

## 6 Meter Antenna

MODEL	Description	FREQ	GAIN	F/B	Max Pwr Watts	CONN	SWR	LEN FT' In"	HRO Price
CA-52HB4	4 element beam	50-54 MHz	-	19 dB	400 W PEP	SO-239	<1.5:1	10'6" Boom	\$129.95



## 2 m and HT Antennas

MODEL	BANDS	GAIN	Max Pwr Watts	CONN	LEN FT/in	HRO Price
<b>Single Band Antennas</b>						
SBB-25/SBB-25NMO	2m	4.1	100	PL-259/NMO	4'8"	\$48.95
<b>HT Antennas</b>						
CH-32 MINI Ant	2m/70cm	—	10	BNC	1.75"	\$29.95
MH-510	6m/2m/70cm	0/0/3.2	10	SMA	20.75"	\$37.95
HT-224	2m/220/70cm	1.3/1.4/1.8	10	SMA	11"	\$39.95
SMA-501 MINI Ant	2m/70cm	—	10	SMA	1.5"	\$29.95
SMA-3	2m/70/33cm	1.2/1.7/3.4	—	SMA	9.75"	\$39.95
SMA-24/SMA-24J	2m/70cm	2.15/5.3	20	SMA/Rev SMA	17.5	\$24.95
BNC-24	2m/70cm	—	20	BNC	17.5	\$24.95
SMA-503/SMA-503J	2m/70cm	—	10	SMA/Rev SMA	8.5"	\$29.95
CH-75	2m/70cm	-3.2	50	BNC	14.75	\$24.95
SH-95	2m/70/23cm	1.5/2/5.5	10	BNC	15"	\$29.95

## Comet High-Power Duplexers and Triplexers

Zinc-alloy, die-cast, twin cavity, low input loss, high-isolation, and high-power. Modernize your station with Comet high-performance antenna products.

MODEL	PORT	Freq MHz	CW Watts	PEP Watts	Loss dB	Isol dB	Mix Conn	Port Conn	HRO Price
CF-416A (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.15 0.25	60 60	SO-239	PL-259 w/leads PL-259 w/leads	\$49.95
CF-416C (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.15 0.25	60 60	N- Female	PL-259 w/leads N-Male w/leads	\$54.95
CF-4160I (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.1 0.2	60 60	SO-239	PL-259 w/o leads N-Male w/o leads	\$48.95
CF-4160K (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.1 0.2	60 60	SO-239	PL-259 w/o leads PL-259 w/o leads	\$48.95
CF-416B (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.15 0.25	60 60	SO-239	PL-259 w/leads N-Male w/leads	\$49.95
CF-706A (2m/70cm)	LPF HPF	1.3-75MHz 75-470MHz	175 175	350 350	0.5 0.5	40 40	SO-239	PL-259 w/leads PL-259 w/leads	\$69.95
CF-530 (6m/125-470)	LPF HPF	1.3-90MHz 125-470MHz	350 350	600 600	0.2 0.2	45 45	SO-239	PL-259 w/leads PL-259 w/leads	\$74.95
CF-530C (6m/125-470)*	LPF HPF	1.3-90MHz 125-470MHz	350 350	600 600	0.2 0.2	45 45	PL-259	SO-239 w/o leads SO-239 w/o leads	\$74.95
CF-360A (10m/6m)	LPF HPF	1.3-30MHz 50-470MHz	350 350	600 600	0.2 0.2	45 45	SO-239	PL-259 w/leads PL-259 w/leads	\$69.95
CFX-4310C (2m/70cm/1.2)	LPF BPF HPF	1.6-60MHz 100-150MHz 350-500MHz 840-1.4GHz	600 450 300 100	1KW 800 500 200	0.15 0.25 0.25 0.3	50 50 50 50	N- Female	PL-259 w/o leads PL-259 w/o leads N-Male w/o leads	\$79.95
CFX-514 (6m/2m/70cm)	LPF BPF HPF	1.3-90MHz 130-200MHz 380-500MHz	450 450 300	800 800 500	0.2 0.25 0.3	55 55 55	SO-239	PL-259 w/leads PL-259 w/leads PL-259 w/leads	\$79.95
CFX-514J (6m/2m/70cm)	LPF BPF HPF	1.3-90MHz 130-200MHz 380-500MHz	450 450 300	800 800 500	0.15 0.2 0.25	55 55 55	SO-239	SO-239 w/o leads SO-239 w/o leads SO-239 w/o leads	\$79.95
CFX-324A (2m/220/70cm)	LPF BPF HPF	1.3-150MHz 200-320MHz 390-500MHz	350 350 350	600 600 600	0.2 0.25 0.3	40 40 40	SO-239	PL-259 w/leads PL-259 w/leads PL-259 w/leads	\$88.95
CFX-324B (2m/220/70cm)	LPF BPF HPF	1.3-150MHz 200-320MHz 390-500MHz	350 350 350	600 600 600	0.2 0.25 0.3	40 40 40	SO-239	PL-259 w/o leads PL-259 w/o leads PL-259 w/o leads	\$85.95

\* To run multiple antennas with the Yaesu FT-8900

## DUPLEXERS

### Dual 2 m / 440 MHz

#### 2 m / 70 cm Mobile Antenna Now with NMO Connector CA-2x4SRNMO

Comet's popular CA-2x4SR broad-band mobile antenna now is available with an NMO connector. Black anodized finish. 3.8 / 6.2 dBi gain.  
HRO Price \$69.95

#### Flexible Dual-Band SBB-1

Convenient, very flexible 2 m / 70 cm 17" antenna. Comes with either a gold-plated PL-259 (Model SBB-1) or NMO connector (Model SBB-1NMO).

#### Gain:

146 MHz 1.5 dBi 1/4 wave  
446 MHz 2.15 dBi 1/2 wave

Max Power: 60 Watts

VSRR: 1.5:1 or less

HRO Price \$42.95

#### Dual-Band Mag Mount Antenna M-24

Economical black anodized 2 m / 70 cm antenna is 19.5" tall and comes with 13 feet of RG-58/U coax and either a gold-plated PL-259 (Model M-24M) or BNC connector (Model M-24B) or model M-24S (SMA) soldered on.

#### Gain 146 MHz:

1.7 dBi 3/8 wave

#### Gain 446 MHz:

4.1 dBi 1/4 + 5/8 wave

Max Power: 80 Watts

VSRR: 1.5:1 or less

Impedance: 50 Ohm

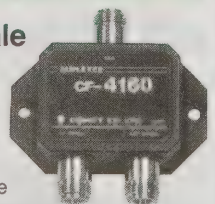
HRO Price \$39.95

M-24M

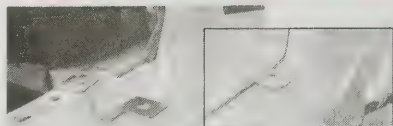
### Duplexer

#### All-Female Duplexer CF-4160N

1.3-170 / 350-540 MHz du-plexer with three N-female connec-tors allows the user to attach their own low loss jumpers in the length needed.  
HRO Price \$58.95



## Mounts



### Vehicle Specific Antenna Brackets

These stainless-steel no-holes-to-drill mounts use an existing fender bolt under the hood. A 3/4-inch hole accepts a standard NMO type connector or use Comet UHF connector mobile cable assemblies. Specific mounts for most popular trucks and SUVs: Chevrolet, Ford, Dodge, GMC. Call HRO for compatibility. *Pictured: DG2ANTPF Dodge Ram 1500 2009-2014*  
**HRO Price \$19.95**



### Universal Mount CP-5M / CP-5NMO

These universal mounts use the heavy-duty RS-730 lip bracket. Each includes 5 meters (16'6") of deluxe 2-step coax and an antenna mount connector: gold-plated PL-259 on coax end with detachable barrel for easy installation. 18-inch lead of mini RG-174 coax for easy entry through the weather seal. Choose the model that has the connector for the antenna you are using. **HRO Price \$69.95**

### Comet Mobile Mounting Systems

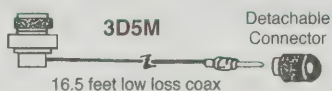
Comet has a wide variety of mobile mounts. Choose the mount and coax cable assembly that best fits your personal needs. All Comet cables have detachable connectors.

MODEL	DESCRIPTION	HRO Price
<b>Mounts with Coax Cable Installed</b>		
CP-5M	Universal multi-angle lip mount w/deluxe cable SO-239/PL-259 Conn	\$69.95
CP-5NMO	Same as CP-5M but with NMO/PL-259 Conn	\$69.95
HD5-3/8-24	3/8-24 heavy duty lip mount w/ PL-259 connector	\$69.95
LD-5M	Light duty lip mount, 16'4" deluxe cable assembly, UHF Conn	\$55.95
CM-5M	Standard heavy-duty mag mt with RG-58A/U, coax, UHF conn, max antenna height 4 ft	\$24.95
<b>Mounting Brackets Only, No Coax</b>		
RS-840	Heavy duty lip mount, low profile, accepts SO-239 connector	\$36.95
RS-730	Heavy duty universal lip mount, accepts SO-239 connector	\$32.95
RS-720	Medium duty universal lip mount, accepts SO-239 connector	\$29.95
RS-720NMO	Medium duty universal lip mount, accepts NMO connector	\$29.95
RS-520	Light duty universal lip mount, accepts SO-239 connector	\$29.95
<b>Coax Cable Assemblies</b>		
CK-3M5	17 foot high-quality cable includes 12" RG-188 to avoid water leak/cable damage. UHF Conn	\$42.95
CK-3M	Same as CK-3M5 but 9' 9" of deluxe cable assy, UHF Conn	\$35.95
CK-5N	13' 6" of deluxe 2-step cable assembly, N- Conn	\$49.95
5D4N	13' 6" low loss (2400 MHz) coax cable, N-conn	\$34.95
3D4N	13' 6" low loss (1200 MHz) cable assy, N-conn	\$32.95
<b>Antenna Connector Adapters</b>		
AD-25M	Turns an SO-239 mount into an NMO mount	\$14.95
AD-15M	Turns an NMO mount into an SO-239 mount	\$17.95
AD-10N	Turns an NMO mount into an N-female mount	\$17.95

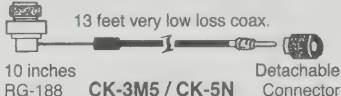
### Window Gap Jumper

CTC-50M

This device crosses the space between window frames. The frequency range is up to 1.3 GHz with SO-239 connectors. Max pwr HF 100 W PEP, VHF 60 W, UHF 40 W, low loss, 50 ohm impedance. **HRO Price \$54.95**



RG-188 provides easy entry into the vehicle from an exterior mount.



### Roof Rack Mount RS-660U

This new roof-rack mount opens wider than the old version – up to 2.5 inches – and supports bigger antennas.

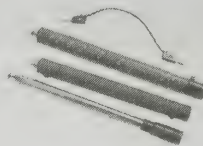
**HRO Price \$37.95**



## HF ANTENNAS

### HF Antennas

### 3.5 - 50MHz 9 Band Portable Telescoping Antenna HFJ-350M



- Breaks down into Three Convenient Sections for additional portability. (shown)
- Quickly and easily

change frequency by changing plug to the desired band.

- 1/4λ Base Loaded Antenna.
- For best performance, it's recommended to use an antenna tuner and counterpoise.
- Base connector is a PL-259.
- Max power 75W SSB 3.5MHz, 100W SSB 7-50MHz.

**HRO Price \$119.95**

### 40 / 20 / 15 / 10 m Rotatable Dipole H-422

This broad-band, compact, rotatable dipole offers excellent performance even when mounted only 10-15 ft. above ground in a V shape. Heavy duty hardware and 2.5 kW balun are included. During assembly the user chooses any of the three pre-drilled holes to tune the 20 / 15 / 10 m SWR dips to the low-mid- or upper-band ranges simultaneously. 40 m TX bandwidth tunes independently of the other three bands.

- Length "V" shape 24' 5", Horizontal 33' 10".
- VSWR less than 1.5:1 or less after tuning.
- Impedance 50 ohms. Stainless hardware.
- Wind Load 3.01 sq feet.
- Max Power 1000 W, SSB / 500 W FM.
- SO-239 connector.

**HRO Price \$339.95**

### 40 m - 70 cm Mobile Antenna UHV-6

Without HF coils attached, the UHV-6 is a tribander for 6 m / 2 m / 70 cm. The top of the element has a threaded socket for the 40 m, 15 m, or 10 m coils (included), making the UHV-6 a quad-band antenna.

- Optional coils for 80 m, 20 m, 17 m.
- Easy to mount and configure.
- Fold-over hinge included.
- GAIN on 2 m: 2.15 dBi; 70 cm: 5.5 dBi.
- Length 48" to approx. 76" maximum.

**HRO Price \$169.95**

### Quad Band 10 / 6 / 2 m / 70 cm UHV-4

Developed for the Yaesu FT-8900. The 10 m and 6 m bands tune independently and will tune for SSB and FM. Length approx. 54".

**HRO Price \$119.95**

## Telescopic Masts

These portable, temporary telescopic fiberglass masts extend to the sky! Just pull out each section and twist to lock. Select from five models, 20 to 43 feet. Each mast collapses to an acceptable height for true portability.

These high-strength fiberglass masts are super lightweight – the largest weighs just 7.7 lbs. Twist and Lock sections allow quick pull-up and take-down. Use them while traveling, camping – at hotels, hamfests, field day, DX-peditions.

### MFJ-1917

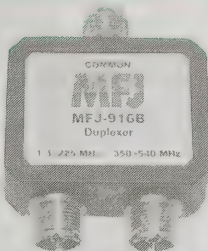
The largest mast can be used for a full-time permanent wire installation or small, lightweight beam or vertical. Put up a full size inverted Vee, dipole or vertical antenna in minutes and get the height you need to QSO with anyone, anywhere. Use multiple telescopic masts to construct other types of antennas like loops, quads, rotatable dipoles even beams. The ideas are endless!

- MFJ-1910** 33 ft., light duty w/top tie ring.
- MFJ-1911** 20 ft., light duty w/top tie ring.
- MFJ-1913** 28 ft., lightweight w/top tie ring.
- MFJ-1915** 25 ft., for heavy duty use.
- MFJ-1916** 34 ft., for heavy duty use.
- MFJ-1917** 43 ft., heavy duty w/top tie ring.

## Duplexers / Triplexers

### MFJ-916B

Use HF or 2-meter / 440 MHz antennas with separate HF or 2-meter / 440 MHz rigs without a built-in duplexer. Low loss SO-239s, 50 Ohm ports, 200 Watts PEP.



**MFJ-916BN** with N type connector.

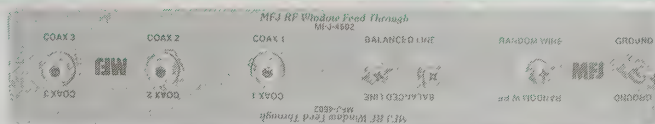
**MFJ-916BC** with coax pigtailed terminated with PL-259 connectors.

**MFJ-4926S** Triplexer for 1.6-60, 110-170 and 350-570 MHz. SO-239 connectors.

**MFJ-4926C** Triplexer for 1.6-60, 110-170 and 350-570 MHz. Pigtail PL-259 connectors.

**MFJ-4936S** Triplexer for 1.6-150, 220-225 and 400-550 MHz. SO-239 connectors.

## Window Feedthrough



Weather-proof antenna feedthrough panels mount in your window sill to let you bring all your antenna connections into your ham shack without drilling holes through walls. Simply place in window sill and close window.

One cut customizes it for any window up to 48 inches. Use horizontally or vertically. Real Western Red Cedar wood is naturally resistant to rot, decay and insects – lasts longer, maintenance-free. Pitch and resin free for a wide range of beautiful finishes or leave it in its naturally beautiful raw finish. Edges are sealed by weather-stripping to insulate against all weather conditions.

All are 3/4 D x 3-1/2 H x 48 W inches, except for MFJ-4605, which is 3/4 D x 7 H x 48 W. Inside / outside stainless steel plates bond all coax shields together to ground connection. Stainless steel ground post brings outside ground connection inside.

### MFJ-4602

Three SO-239 Teflon® coax connectors let you feed HF / VHF / UHF antennas. High voltage ceramic feed-thru insulators bring 450 / 300 Ohm balanced lines into your ham shack. Ceramic feed-thru insulator for longwire or random wire. Stainless steel ground post.

### MFJ-4603

Four 50 Ohm Teflon® SO-239 coax connectors let you feed HF / VHF / UHF antennas at full legal power limit.

A 50 Ohm Teflon(R) coax N-connector lets you use any antenna up to 11 GHz, including 450 MHz, UHF, satellite, moon bounce and 2.4 / 5.8 GHz Wi-Fi antennas.

A 75 Ohm, 1 GHz F-connector makes it easy to bring in television, satellite, HD, cable TV and FM radio signals.

A pair of high-voltage ceramic feedthru insulators lets you bring in 450 / 300 Ohm balanced lines directly to your antenna tuner.

- A random / longwire antenna ceramic feedthru insulator.
- 5-way binding posts let you supply 50 volts / 15 amps DC / AC power to your outside antenna tuners / relays / switches.
- Stainless ground post brings in ground connection, bonds inside / outside stainless steel panels together and drains away static charges.
- MFJ's exclusive Adaptive Cable Feedthru™ lets you bring in rotator / antenna switch cable, etc. without removing connectors (up to 1-1/4 X 1-5/8 inches). Adapts to virtually any cable size. Seals out rain, snow, adverse weather.

### MFJ-4601

Has six high quality Teflon® SO-239 connectors for HF / VHF / UHF coax-fed antennas and a stainless steel ground post. Handles full 1500 Watt legal limit.

### MFJ-4601N

Like MFJ-4601, but has N-type connectors.

### MFJ-4600

Has four sets of ceramic feedthrough insulators and two SO-239 connectors.

### MFJ-4604

Has five adaptive cable feedthru™ – two for connectors up to 1-1/4 x 1-5/8 inches and three for UHF / N size coax connectors. Adapts to virtually all cables used in ham radio. Seals out weather.

### MFJ-4605

Combines MFJ-4603 and MFJ-4604! Gives every connection you'll ever need and more -- without drilling holes in wall!

## Antenna Insulators

### MFJ-16C06

6-pack of glazed ceramic center / end insulators are extra strong – will not break with long antennas and will not arc-over or melt even under full legal power. Molded ridges give extra-long path to prevent high-voltage breakdown. Smooth 5/16" wire holes prevent wire damage. Center or end insulator for dipoles, doublets, G5RVs, guy wires, vees, etc.

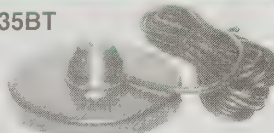
### MFJ-16A06

Glazed ceramic egg insulator, has 7/16" holes. 9/64" diameter by 2-1/8" length. High power.

## HF Magnet Mounts

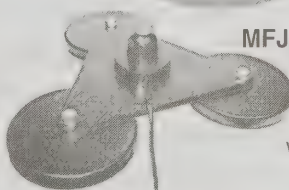
### MFJ-335BT

5" magnet mount with 17' coax.



### MFJ-336T

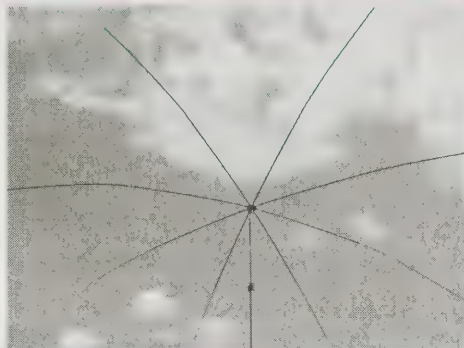
Tri-magnet HF mount with 17' coax.



# MFJ



## Octopus Antenna



### Octopus 4-Band Antenna

#### Reach out for big DX!

Choose your favorite four bands! Super easy to assemble! Use metal pole or telescopic mast up to 1-inch, easily secured, tightens with thumbscrew. And . . . just screw in your HamSticks™! (See page 94)

Rotate with a small TV rotator (see Hy-Gain ARI-500, \$129) or just ground mount for omni-directional.

Uses eight Hamsticks™ (two of the same for each band). Tough octagonal enclosure has eight 3/8-24 threaded connectors for Hamsticks.

Has built-in balun and a super strong base tube insulator made of fiberglass filled ABS.

Put this antenna up in minutes! Makes for a great stealth, portable, campground, or permanent base antenna. Super lightweight, 14-foot diameter. Hamsticks™ break down to about four feet for easy storage.

#### HRO Prices:

**MFJ-2100 \$109.95**

Mounting bracket only

**MFJ-2104 \$269.95**

Mounting bracket with your choice of four (two each) 250 W Hamsticks™.

**MFJ-2104H \$509.95**

Mounting bracket with your choice of four (two each) high power 600 W Hamsticks™.

**Free Ground Shipping  
on Most Orders  
Over \$100.**

# ROTATORS

## hy-gain

*Hy-gain rotators are the first choice of hams around the world! One is perfect for your antenna configuration.*

### Ham - V

For medium antenna arrays up to 15 square feet wind load. Includes the DCU-1 Pathfinder digital control unit. No more terminal strips. Features cinch connector plus 8-pin plug at the control box. Maximum mast size 2 1/16".

**HRO Price \$1119.95**



### Tailtwister Series II

This unit handles medium communications arrays up to 20 square feet wind load area. Available with the DCU-1 Pathfinder digital control box or standard analog control box. Has 138 ball bearings for large load bearing strength. Maximum mast size 2 1/16".

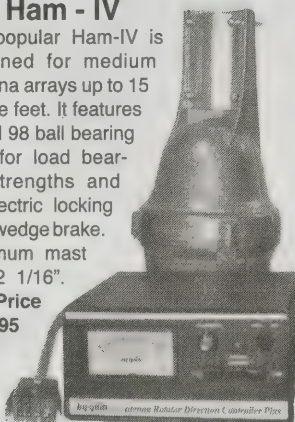
**HRO Prices: T2X \$809.95, T2XD \$1249.95**



### Ham - IV

The popular Ham-IV is designed for medium antenna arrays up to 15 square feet. It features a dual 98 ball bearing race for load bearing strengths and an electric locking steel wedge brake. Maximum mast size 2 1/16".

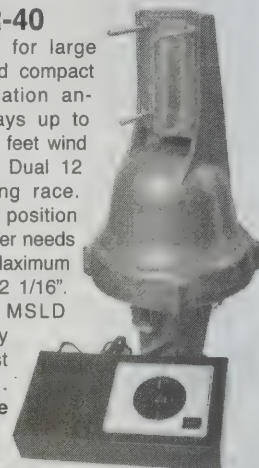
**HRO Price  
\$649.95**



### AR-40

Especially for large FM-TV and compact communication antenna arrays up to 3.0 square feet wind load area. Dual 12 ball bearing race. Automatic position sensor never needs resetting. Maximum mast size 2 1/16". Includes MSLD light duty lower mast support.

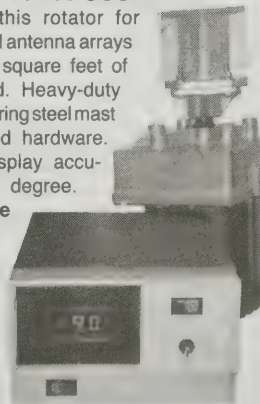
**HRO Price  
\$359.95**



### HDR-300A

Choose this rotator for king-sized antenna arrays up to 25 square feet of wind load. Heavy-duty self-centering steel mast clamp and hardware. Digital display accurate to 1 degree.

**HRO Price  
\$1519.95**



### CD-45II

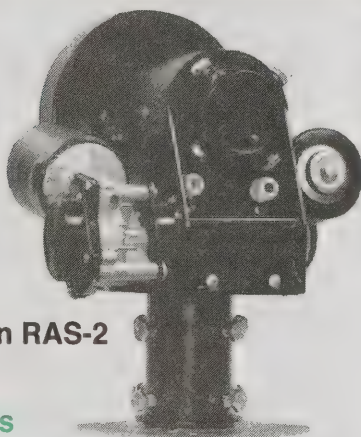
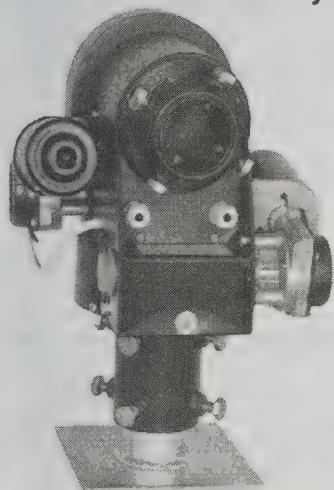
The CD-45II handles up to 8.5 square feet of antenna wind load when mounted inside the tower or 5 square feet with the included MSLD light duty lower mast adapter. Has 58 ball bearing race. Maximum mast size 2 1/16".

**HRO Price \$459.95**



**Super heavy-duty Rotators . . . Super strong double worm gear drives, self-braking, extremely quiet motors, one degree position resolution, automatic digital controller. Up to . . . 38 square feet wind load . . . 8000 inches per pound turning torque . . . 24,000 inches per pound brake torque . . . 700 pounds vertical load**

**Hy-Gain RAS-1**



**Hy-Gain RAS-2**

### Azimuth-Elevation Rotators

#### RAS-1 & RAS-2

Hy-gain offers RAS-1 and BIG RAS (RAS-2) super heavy-duty azimuth-elevation rotators. Same heavy-duty design as RAKs and includes the RAS-2C digital controller.

RAS-2 has same specifications as RAS-1 below but with these super specs. Turning power: 5,000 inches per pound at all voltages. Vertical load: greater than 700 pounds. RAS-2 weighs 44 pounds.

**RAS-1 including RAS-2CU controller HRO Price \$1619.95**

**RAS-1R rotator only HRO Price \$1279.95**

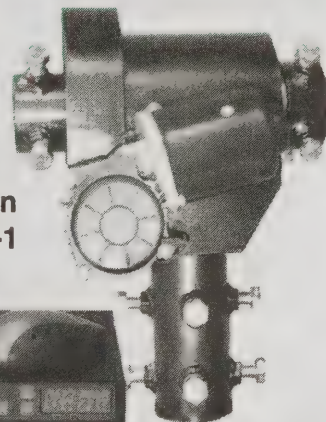
**RAS-2 including RAS-2CU controller HRO Price \$2199.95**

**RAS-2R rotator only HRO Price \$1939.95**

### Hy-Gain RAS-1 Specifications

RAS-1 Specs	RAS-1 @ 12 V	RAS-1 @ 18 V	RAS-1 @ 24 V
Wind load area (approx)	30 square feet	30 square feet	30 square feet
Turning torque	1400 inches / pound	1800 inches / pound	3240 inches / pound
Brake torque	14,000 inches / pound	14,000 inches / pound	14,000 inches / pound
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	550 pounds	550 pounds	550 pounds
Rotation speed (360 degrees)	120 seconds	90 seconds	60 seconds
Precision, rotator weight	1 degree, 29 pounds	1 degree, 29 pounds	1 degree, 29 pounds
Rotation range (Azi/elev)	360 / 180 degrees	360 azi / 180 degrees	360 / 180 degrees
Position sensor	Reed switch	Reed switch	Reed switch
Mast size bottom / elevation	2.6 bottom / 2.0 elevation	2.6 bottom / 2.0 elevation	2.6 bottom / 2.0 elevation

**Hy-Gain REAL-1**



**Elevation Rotator REAL-1**

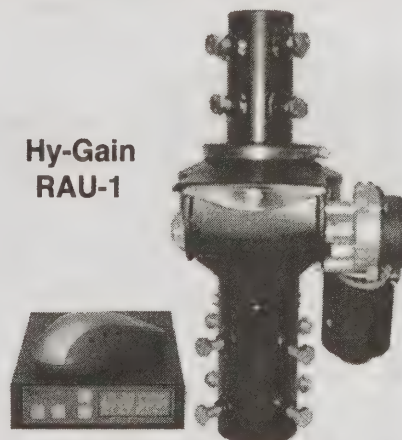
Elevation rotator has all specifications of the popular RAK-1 but is for moving antennas 180 degrees up or down. Package includes RAK-ICU controller.

**REAL-1 including controller**

**HRO Price \$959.95**

**REAL-1R rotator only HRO Price \$699.95**

**Hy-Gain RAU-1**



**Econo Spid Rotator RAU-1**

Spid's smallest rotator is a step up from mainstream rotators and provides excellent support for direct round mast mounting. Incorporates elevation rotator to provide full AZ/EL capability. Ideal for light duty 3-4 element antennas, short boom, 6-meter beams, and 2- Meter / 70 cm beam antennas.

**RAU-1 including RAK-ICU controller**

**HRO Price \$879.95**

**RAU-1R rotator only HRO Price \$589.95**

# hy-gain

## Rotator Controllers



### DCU-3 for Hy-Gain

Digital rotator controller allows you to program 6 beam headings. Gives fully automatic or manual control of your HyGain Ham or T2X Rotators. Has USB / RS-232 ports for computer control. Adjustable LCD sleep time. Field upgradeable firmware. Press a memory button or dial in your beam heading or let one of the popular software platforms take control for you. Bright blue LCD. Available for 110 VAC or DCU-3X for 220 VAC. **HRO Price \$459.95**

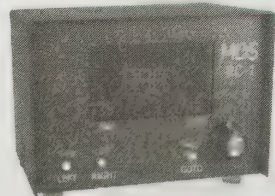
**DCU-2** controller with fewer programmable memories.

### YRC-1 for Yaesu

Replace your Yaesu rotator control box with the YRC-1 rotator controller. Easy to use; dial in your beam heading and tap the GOTO button. Bright blue LCD shows current, dialed-in, and computer-controlled beam headings, and your call sign. USB port for computer control. Fast variable DC motor minimizes overshoot. For current Yaesu - DXA series rotators. **HRO Price \$329.95**

**YRC-3** is like the YRC-1 but adds 6 memories.

### Economy Digital Controller for Hy-gain, Ham II, IV, T2X, Yaesu, and many other common rotators



### Hy-Gain MDS RC-1

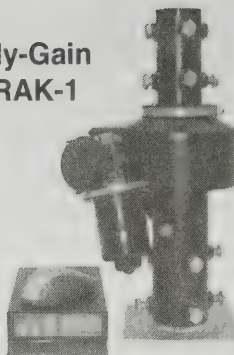
The RC-1 is a direct replacement control box for almost all versions of Yaesu rotators. Get ALL these features at half the cost of similar digital controllers!

- It is priced well below the repair cost of many factory control boxes.
- RC-1 uses slave power from existing Ham series, AC controllers (RC1-G, RC1-H). It is emergency and battery-power compatible for DC models.
- You get automatic brake control on Ham series rotators and automatic speed control on DC powered rotators.
- A graphic LCD screen is large and bright blue for easy visibility. Huge beam heading digits!
- The "Go to" button gives you the reciprocal heading.
- Computer-controlled operation via the included USB (for RC1-Y) or serial ports let you use your favorite software programs. Field upgradeable firmware.
- Rugged aluminum for maximum RF shielding is a compact 5-1/4 wide x 3-1/2 height x 4-1/8 inches deep.
- Order RC1-Y for Yaesu; RC1-E for Emotor; RC1-P for Spid; RC1-G and RC1-H for Hygain rotators.

**RC-1 HRO Price \$249.95**

# SPID ROTATORS

### Hy-Gain RAK-1



### RAK-1 (RAK)

These super heavy-duty RAK rotators are designed with a simple double worm gear drive. This results in a super-strong ultra-reliable rotator system with inherent self-braking. Each includes a precision automatic digital controller.

Turning is powerful, smooth, precise, and extremely quiet. The inherent self-braking action of its double worm gear drive positively stops it every time - it won't move!

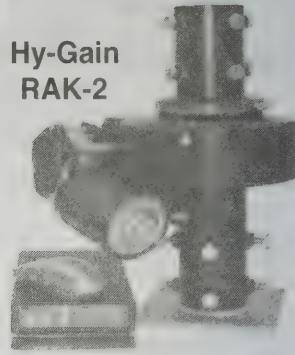
It's fast! A high-torque DC gear motor rotates your antenna 360 degrees in just 60 seconds with 24 volts on the motor. The RAK rotators operate from 12 to 24 volts AC or DC. The higher the voltage, the higher the torque and the faster the turning speed - unique RAK feature.

**RAK-1 including RAK-ICU controller**

**HRO Price \$959.95**

**RAK-1R rotator only HRO Price \$699.95**

### Hy-Gain RAK-2



### RAK-2 (BIG RAK)

It's simple to mount! Pipe mast mount on both ends allows coax cables to pass through the center of the rotator and prevents cable tangling and damage. Optional adaptor plate mounting. See accessories section below.

It's precise! The included RAK-IC controller has one degree resolution and a large 3/4 inch 4-digit easy-to-read soft green LED digital readout. Sealed reed switch sensor technology gives reliable all-weather operation and super tight tolerances with minimal play.

Tough and durable! Heavy-duty construction with 3/16" thick-wall steel pipe, ultra-durable steel housing.

**RAK-2 including RAK-ICU controller**  
**HRO Price \$1319.95**

**RAK-2R rotator only HRO Price \$1099.95**

## Hy-Gain RAK-1 Specifications

RAK-1 Specs	RAK-1 @ 12 V	RAK-1 @ 18 V	RAK-1 @ 24 V
Wind load area (approx)	30 square feet	30 square feet	30 square feet
Turning torque	1400 inches/pound	1800 inches/pound	3240 inches/pound
Brake torque	14,000 inches/pound	14,000 inches/pound	14,000 inches/pound
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	550 pounds	550 pounds	550 pounds
Rotation speed / 360 degrees	120 seconds	90 seconds	60 seconds
Precision	1 degree	1 degree	1 degree
Rotation range	720 degrees	720 degrees	720 degrees
Rotator weight	16 pounds	16 pounds	16 pounds
Position sensor	Reed switch	Reed switch	Reed switch
Max size top/bottom	2 0 / 2 6 inches	2 0 / 2 6 inches	2 0 / 2 6 inches

## Hy-Gain RAK-2 Specifications

RAK-2 Specs	RAK-2 @ 12 V	RAK-2 @ 18 V	RAK-2 @ 24 V
Wind load area (approx)	38 square feet	38 square feet	38 square feet
Turning torque	>5000 inches/pound	>8000 inches/pound	Contact Hy-Gain
Brake torque	24,000 inches/pound	24,000 inches/pound	24,000 inches/pound
Brake construction	Double worm gears	Double worm gears	Double worm gears
Vertical load	>700 pounds	>700 pounds	>700 pounds
Rotation speed (360 degrees)	120 seconds	90 seconds	60 seconds
Precision	1 or 0.5 degrees	1 or 0.5 degrees	1 or 0.5 degrees
Rotation range	720 degrees	720 degrees	720 degrees
Rotator weight	24 pounds	24 pounds	24 pounds
Position Sensor	Reed switch	Reed switch	Reed switch
Max size top/bottom	2 6 inches	2 6 inches	2 6 inches

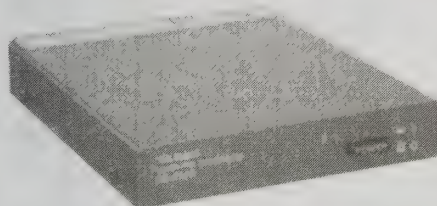


### G-2800DXA

The G-2800DXA is a high-technology rotator designed to turn the largest tower-mounted antenna arrays.

### G-800DXA

The G-800DXA rotator is designed for medium to heavy loads and antennas up to 20 square feet, with control box resets.



### Rotator Computer Controller GS-232B

The GS-232G rotator computer interface provides digital control of Yaesu rotators G-800DXA, G-1000DXA, G-2800DXA, and G-5500.

The GS-232B contains its own PIC18C452 microprocessor with ROM and RAM and 10-bit analog-to-digital converter. The 3 wire async serial line can be configured for serial data rates from 1200 to 9600 baud. The unit has a DB-9 male connector to connect to the RS232C COM port of your computer.

Supplied items include: control cable for the azimuth rotator (5 in to mini DIN), control cable for the Az/El rotator (dual 5 pin to DIN cable), DC power cable, and hook and loop fasteners. This device requires 12 VDC at 110 mA.

### Yaesu Rotator Specifications

Model	Input Voltage	Motor Voltage	Rotation Time	Stationary Torque	Rotation Torque	Maximum Windload	Max. Vert Load	Max. Mast Size	Cable Type	Weight lbs (kg)	HRO Price
G-450A	110 VAC	29-32 VAC	51 sec	217 ft lbs	39.8 ft lbs	10 sq ft	242 lbs	2 in	5-wire	7 (3.2)	CALL
G-800DXA	110 VAC	24 VDC	55 sec	3456 in lbs	43-79 ft lbs	17 sq ft	440 lbs	2.5 in	6-wire	10 (4.5)	CALL
G-1000DXA	110 VAC	24 VDC	55 sec	5200 in lbs	79 ft lbs	22 sq ft	440 lbs	2.5 in	6-wire	15 (6.8)	CALL
G-2800DXA	110 VAC	24 VDC	55 sec	20,832 in lbs	219 ft lbs	34 sq ft	880 lbs	2.5 in	6-wire	26 (11.8)	CALL
G-5500DC	110 VAC	22 VDC	58 sec	289 ft-lbs	*	10.7 sq ft	440 lbs	2.5 in	6-wire	20 (9)	CALL

\* Elevation 101 ft-lbs, Azimuth 44 ft-lbs

# ROTATORS / ANTENNAS

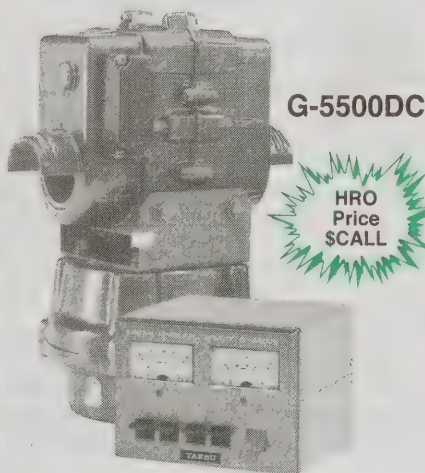
*Yaesu's high quality rotators for amateurs include models for medium to large arrays and for satellite work. There are also provisions for computer control. Contact your nearest HRO for more specifications and discount prices on Yaesu products.*

### G-1000DXA

The G-1000DXA is designed to handle bigger arrays up to 22 square feet. A great value.

### G-450A

The G-450A is ideal for smaller HF and VHF/UHF antennas. Features 360 degree radial compass display with overlap.



### G-5500DC

HRO Price SCALL

## HF Dipole Antenna

### YA-30

This 83-foot broadband dipole provides optimum performance over 1.8-30 MHz. Usual requirements for an antenna tuner between the rig and antenna are eliminated by the unique broadband design. Handles 150 Watts at an SWR of less than 1.9:1 on the amateur bands. Pre-assembled and pretuned. Can be installed as a horizontal flat-top, inverted-V, or sloper. 100 feet of RG-8X with PL-259 included. **HRO Price CALL**

## Mobile Antenna

### HF / VHF / UHF ATAS-120A

The ATAS-120A provides HF / VHF / UHF coverage with automatic motorized tuning. Control radiator length from the transceiver for best SWR. Compatible with Yaesu's FT-100, FT-847, FT-857, and FT-897. **HRO Price CALL**

## Portable Antenna

### HF / VHF / UHF Field Antenna ATAS-25

The ATAS-25 has radiating elements covering amateur bands 10-40 m, 6 m, 2 m, and 70 cm. Mounts to a standard camera tripod (not included). Uses a manual tuning system. Dual frequency operation possible with a duplexer (not included). Antenna collapses to less than two feet to carry; expands to 7.2 foot maximum height. This is an ideal system to use with the FT-817, FT-897, and FT-857 transceivers. Weight is 2.05 pounds. **HRO Price CALL**



# TUBULAR CRANK-UP TOWERS

## MA-Series Crank-Up Masts

The premier MA-series crank-up Tubular Towers are designed to be both safe and neighbor friendly. The slender design gives a clean, flagpole-like appearance and is rated at 90 mph winds per the IBC 2006 code. Per TIA/EIA specifications, adequate safety margins are included. International Building Code calculations are available for most models.

The MA-40 and 550 models require base kits comprised of a flat base, two 1/2" x 10" anchor bolts, and a 4 ft rotor mast w/rotor plate. Comes standard with a wall bracket. No guying is required when tower is properly bracketed to the eave of your roof.

MA-series towers are completely self-supporting only when used with accessory MARB or MAB series bases. The MARB series rotator base allows the entire tower and antenna to be rotated from the base (rotator not included). This allows easy rotator maintenance plus

emergency hand rotation of the entire tower and antenna.

The MA-550MDP and 770MDP models include a heavy duty motor drive with positive pull down. The MDP models provide motorized raising and lowering of the tower. A remote control unit (RMC-1000) accessory is available that allows raising and lowering from your ham shack or other remote location.

All models without motor drives come standard with manual hand winches which have load actuated brakes for maximum safety. This feature prevents the winch from free-wheeling and causing injury to you or your installation in the event that you lose your grip during raising or lowering.

All steel used at US Tower conforms to ASTM specifications. All welding is done by certified factory personnel. All of our towers are factory tested by trained personnel before leaving the plant.

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
MA-40	40'	21'6"	2	245	3" sq.	4.5"	CALL
MA-550	55'	22'1"	3	435	3" sq.	6.625"	CALL
MA-550MDP*	55'	22'1"	3	620	3" sq.	6.625"	CALL
MA-770	71'	22'10"	4	645	3" sq.	8.0"	CALL
MA-770MDP*	71'	22'10"	4	830	3" sq.	8.0"	CALL

All Towers will handle 10 sq. ft antenna at 50 MPH winds.

\*These towers require purchase of MCL-100 or RMC-1000

## TMM Series Compact Towers

The TMM series has a minimum retracted height of 11'4" (may vary, depending on rotator used) and a maximum height of 47' including mast. At the tower's retracted height, visual impact is reduced to a minimum and antenna servicing is made easier. Typically the tower and antenna are below the roof line of your home when the tower is fully retracted.

The TMM series towers are lightweight, freestanding crank-up towers that allow up to 20.7 square feet of antenna in 90 mph winds per TIA/EIA specifications. The TMM-433HD allows 31.8 square feet in 90 mph winds. These

lightweight towers should provide many years of trouble free service. All of our towers have a hot dipped galvanized finish inside and out.

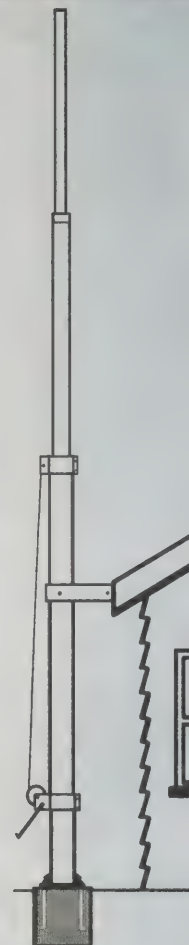
The TMM-433SS and 541SS have a 10" top section which will permit the installation of the Yaesu G800 and G1000 rotators inside the top section. Oversized rotators will prevent full retraction of your tower; however, they may be used if full retraction is not required.

All TMM Series towers require base kits comprised of a hinged T-base and anchor bolts, but include load actuated winch, rotator plate, and eight feet of 2" OD x .120" antenna mast.

### COMPACT TMM-SERIES CRANK-UP TOWERS

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
TMM-433SS	33' w/o Mast	12'3"	4	315	10"	18"	CALL
TMM-433HD	33' w/o Mast	12'3"	4	400	12.5"	20 7/8"	CALL
TMM-541SS	41' w/o Mast	13'	5	430	10"	20 7/8"	CALL

Towers handle 18 sq. ft. antenna at 50 MPH winds. TMM-433HD handles 24 sq. ft.



## Crank-Up Tower Base Information

Foundations are designed in accordance with the International Building Code (IBC) for a "non constrained" condition using Class 5 soil. Alternate or custom foundation designs are available for an extra charge. Anchor rods may be ordered from US Tower, however, reinforcing steel and rebar are not provided. Welder's certified IAW AWS D1.1. Contact US Tower for additional information.

Because of wide variations throughout the country in zoning requirements and loading conditions (snow, wind, ice, etc.), it is the responsibility of the customer to make certain that his Tower conforms to all applicable codes. We recommend you obtain all necessary permits prior to purchase.

### The Customer is Responsible

for obtaining all local city or county building and tower permits

AND

for taking the tower off the freight truck when it is delivered. Please arrange for adequate help.

# LATTICE CRANK-UP TOWERS

## TX Series Freestanding Towers

US Tower's TX series crank-up towers are as strong or stronger than most competitors' heavy-duty models. The TX towers have 21 foot sections with 4 foot overlap to provide extra height and strength. In addition, the overlap helps prevent binding while lowering your tower in high wind conditions.

The TX series towers have a large enough top section (12 1/2") to permit installation of most rotators inside the section for maximum strength while allowing the section to fully retract. Cross bracing at critical points on the tower ensures safety and additional strength. All crank-up towers have a heavy-duty, hot dipped galvanized finish both inside and out, which should provide many years of trouble free service.

The TX series towers come complete with rotator plate and Fulton hand winch, except MDP and MDPL models, which feature automatic load actuated brakes for maximum safety. Base kits are required, consisting of large steel anchor bolts and heavy-duty steel T-base that allows the tower to hinge on for easy installation. All T-bases will accept the TRX series raising fixtures for easy one-man installation. Other accessories include masts and motor drives. The TX-472MDP comes complete with MDP-750 motor drive with positive pull-down feature. The TX-489MDPL includes the MDPL-1000 motor drive and level wind feature.

US Tower's TX series requires no guying. The wind loading is calculated at 90 mph.

### TX-SERIES FREE-STANDING CRANK-UP TOWERS

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
TX-438	38'	21'9"	2	355	12.5"	15"	CALL
TX-455	55'	22'6"	3	670	12.5"	18"	CALL
TX-472	72'	23'3"	4	1040	12.5"	21 5/8"	CALL
TX-472MDP*	72'	23'3"	4	1210	12.5"	21 5/8"	CALL
TX-489MDPL	89'	24'	5	1800	12.5"	25 5/8"	CALL

All Towers will handle 18 sq. ft. antenna at 50 MPH winds.

\* This tower requires purchase of MCL-100 or RMC-1000

## HDX Series Heavy Duty

US Tower's HDX series heavy-duty crank-up towers have up to 2 1/2 times more windloading capacity than others commonly advertised. This superior strength allows for large stacked arrays, while using our commercial type bases and anchor bolts that can be easily installed and vertically adjusted. All HDX series T-bases are designed to use our TRX series raising fixtures to make installations and antenna servicing a one man job.

US Tower carries many different sizes and strengths of masts to use as accessories with the HDX series towers. The HDX-572MDPL and 589MDPL motorized towers provide dual level wind, positive pull down and heavy duty gear box

features. The HDX-589MDPL comes complete with the MCL-100 limit switch package included. All towers using MDP-750 and MDPL-1000 motor drives must use either the RMC-1000 accessory limit switch package or the MCL-100, which allows the raising and lowering of your tower from the comfort of your ham shack or any remote location.

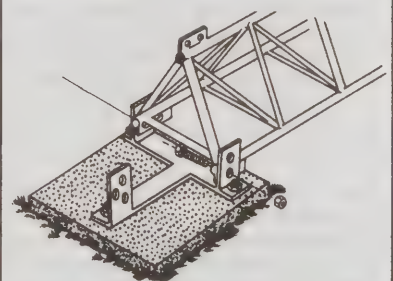
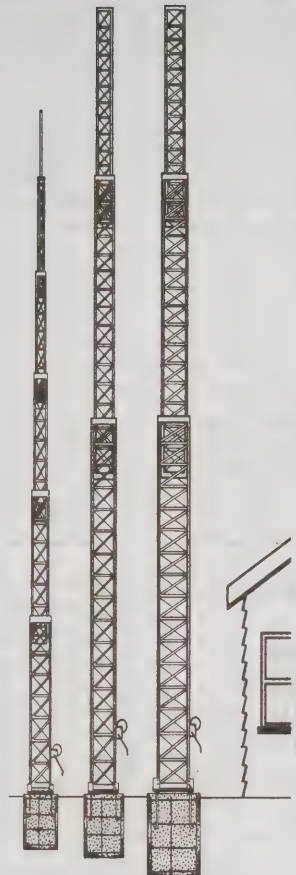
All HDX series towers come complete with rotator plate, but require base kits consisting of anchor bolts and heavy-duty T-base. US Tower's special T-base design allows the tower to hinge for easy installation. US Tower's crank towers require no guying. The HDX Series towers are rated at 90 mph winds.

### HDX-SERIES HEAVY-DUTY CRANK-UP TOWERS

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
HDX-538	38'	21'9"	2	600	15"	18"	CALL
HDX-555	55'	22'6"	3	870	15"	21 5/8"	CALL
HDX-572MDP*	72'	23'3"	4	1600	15"	25 5/8"	CALL
HDX-589MDPL	89'	24'	5	2440	15"	30 5/8"	CALL
HDX-689MDPL*	89'	24'9"	5	3400	18"	37 1/8"	CALL
HDX-5106MDPL*	106'	25'6"	6	3850	15"	37 1/8"	CALL

All Towers will handle 30 sq. ft. antenna at 50 MPH winds.  
HDX-689MDPL rated at 60 sq. ft. of antenna at 50 mph winds.  
HDX-5106MDPL rated at 35 sq. ft. of antenna at 50 mph winds.

\*These towers require purchase of MCL-100 or RMC-1000



The factory reserves the right to make changes or modifications without notice.

Call Toll-Free for  
Information and  
Discounts  
on U.S. Towers and  
Accessories



## ALM SERIES

# CRANK UP ALUMINUM MASTS

The ALM Series is a patented mast system designed and manufactured by US Tower Corp. The intent of the ALM Series is to provide a versatile and highly capable mast system that can be quickly transitioned for different uses.

Using lightweight aluminum construction, the ALM Series masts can be easily loaded into a vehicle, transported to a field event, and deployed using a number of mobile mast mount options including hitch mounts and drive-on bases.

With its high wind rating, the ALM Series can also be used as a permanently

installed mast attached to a house, an out structure, or installed free-standing. No guying is required for any deployment configuration of the mast.

Whether the intent is to use the ALM Series as a mobile solution, a fixed solution or both, the low maintenance, high strength, weather resistant construction of the mast ensures that you will be prepared at all times with an easy-to-use cost-effective solution.

### Four heights available:

Height	Rated	Load
16 feet	50 lbs	9 sq feet @ 65 mph
21 feet	50 lbs	9 sq feet @ 65 mph
26 feet	50 lbs	8 sq feet @ 65 mph
31 feet	50 lbs	8 sq feet @ 65 mph

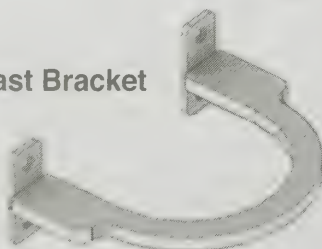
### Features:

- Lightweight aircraft grade aluminum construction.
- Rapid deployment.
- Corrosion resistant.
- Ideal for temporary or permanent installations.
- Built-in pivot clevis for easy tilt-up.
- Adjustable height winch.
- High-ratio winch.
- High strength-to-weight ratio.
- Low maintenance.
- 4 1/2 ft, 2" O.D. antenna mounting mast with universal rotator mount plate.

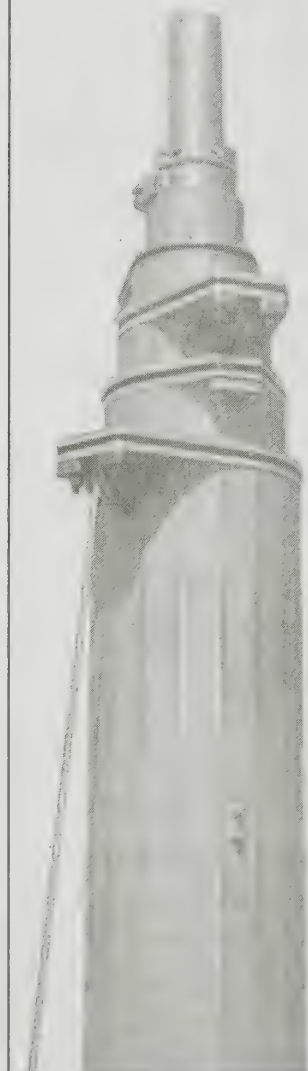
### Options:

- Crank tilt-up raising fixture (ALM-MAF).
- ALM rotating fixture (ALM-MARB).
- Hitch mount fixture (ALM Hitch Mount).
- Wall mount fixture; 16" or 20" standoff arms.
- Standalone base (ALM-MAB).
- Drive-on mast stand (15603-0004-1012).
- Cable / coax rings (specify which ALM mast).

Mast Bracket



Mast Base



# General Information for Our Valued Customers

## Easy Ordering

Toll-free 800 numbers located throughout the United States are available for orders. This provides personnel at one location or another to answer your questions for extended hours Monday through Saturday. You will find the same low prices at all locations and, thanks to computers, we have the stock levels of all locations available to each salesperson for estimates of availability and delivery.

24 Hour "On-Line" Ordering is now available on the INTERNET! URL is <https://www.hamradio.com>

Shipments are made from any of our locations that has the particular items you need in stock. In most cases, the shipment will be made from the location nearest you (if stock is available). HRO is trying to provide the quickest shipments in the industry using these methods.

California customers can now order using toll-free numbers to speak to their California store of choice.

## Sales Tax

Ham Radio Outlet collects, remits, and reports sales tax in accordance with all state and local requirements. For more information, please visit our Sales Tax FAQ webpage located at [https://www.hamradio.com/general\\_info\\_sales\\_tax.cfm](https://www.hamradio.com/general_info_sales_tax.cfm).

You will find that this small extra charge will be more than overcome by the convenience of the largest ham radio inventories in the United States. You will also find courteous and knowledgeable salespeople to assist you. We think you will find HRO to be the company you want backing you when it comes to dealing with any problems you might have with manufacturers or shipping companies.

## Phone Orders

To place a phone order using a credit card, please have the following information available if you are a first-time caller or have not made a recent purchase from HRO.

We will ask for your callsign (if any), credit card number, expiration date, your home telephone number, and possibly the name, address, and telephone number of the bank listed on your charge card statement.

## Payment

We accept Visa, MasterCard, American Express, Discover Card and PayPal. Personal checks are also accepted; however, processing time may delay shipment by some 10 days.

When using a credit card, please have the card in front of you since we will need all the information, including the name of the issuing bank. If the card holder's BILLING address differs from the shipping address, please be sure to specify both addresses and telephone numbers. For your protection, we thoroughly investigate the validity of all credit card purchases.

## COD Orders

COD payments must be made by cashiers check or money order at the time of delivery. There is a small fee for COD shipments.

## Commercial Sales Purchase Orders

Written purchase orders will be accepted from city, state, and federal agencies, and, with prior approval of credit, from commercial organizations. HRO quotes, in most cases, prices that require payment on receipt of merchandise. You may find a surcharge for credit terms applied to your pricing. Please indicate that you require terms when calling for price quotes.

## Delivery

Free UPS or FedEx Ground Transportation in the continental US on most items over \$100.

All Alaska and Hawaii shipments can now be shipped by UPS Ground as well as by Blue Label (2nd Day Air) or Red Label (Overnight) or USPS. Please ask for charges.

In a Hurry? If necessary to expedite shipments, UPS has Red Label (overnight), Blue Label (2nd-day) and Orange Label (3 day) services available at an extra cost. Please request charges for these services.

Foreign Deliveries: We ship world-wide. Contact our stores, by fax or email, with your needs. We can give you quotes and details for placing your foreign order. Payment methods include wire transfer direct to our bank as well as payment by VISA/ MC charge cards, PayPal or check drawn in U.S. Funds from a U.S. Bank. Shipments are made (depending on size) by UPS, FED EX, DHL, or international air mail. Some orders to some foreign countries cannot be insured to the full value.

Truck Delivery: On day of delivery by truck, please be sure to have enough help, and / or proper equipment on hand for unloading merchandise. Truck drivers are NOT required to provide assistance. If you are not experienced at handling large, awkward items such as towers, antennas or amplifiers, please ask properly trained people to assist you.

Canadian Orders can now be shipped via UPS. These costs will be added to your invoice.

## Damaged Items

UPS or FedEx If the item is obviously damaged, note this with the driver and refuse shipment. This item will be returned to HRO and another will be sent at no additional charge. If hidden damage is noted, contact UPS or FedEx as soon as possible. They will arrange pickup. Once the item is received by HRO, a replacement will be sent.

TRUCK If there is damage or the shipment is short, it is the customer's responsibility to file the claim with the trucking company. At the time of receipt of item, it is recommended that you have the driver write "damaged" or indicate shortage on the bill of lading he gives to you. Be sure to have the same notation as well as drivers signature on his copy also.

MAIL It is the customer's responsibility to file all loss or damage claims with the postal department.

## Prices

Many prices shown are suggested list price. In most cases we offer large discounts. Equipment manufacturers constantly change prices, offer specials or react to the international exchange rates. Simply call one of our 800 numbers and our staff will be happy to quote you the current selling price of the item you are interested in. Prices are subject to change without notice or obligation to the customer. Sorry, we cannot honor typos in this catalog.

## Software

Software is sold on a non-returnable basis. Any software problems will be resolved under the terms of the manufacturer's warranty.

## Lost Items

When your order is delivered, please carefully count items and if anything is missing, notify HRO at once.

Occasionally, cartons shipped at the same time will arrive at their destination two or three days apart.

If you notify HRO within 10 days, we will replace lost or damaged items after completion of proper documentation and acceptance by the shipping agency.

## New Equipment Returns

Products are not sold for evaluation. Under some circumstances (at the discretion of HRO) and with prior approval of the store of purchase, HRO will accept an item for return. Under most circumstances a 15% restocking fee and all freight charges will be assessed.

Your means of refund for returns will be the same as that used for your original payment except for cash, which will be refunded by check. HRO will pay from its corporate offices. It can take up to two weeks.

Defective merchandise may be returned within 10 days of the original purchase for exchange. Original receipt must accompany the return. Contact your salesman for details.

## Manufacturer's New Equipment Warranties

Ham Radio Outlet supports all manufacturer's warranties. Actual warranty terms are included within the shipping container of most items. If needed, you may request from any of our locations a free copy of the manufacturer's written terms for any warranted product. Please request by model number and indicate the page in this catalog that represents the product.

Ham Radio Outlet will in many cases provide in-store repairs; please contact the store of purchase for information. It will be necessary to provide us with the invoice number and purchase date, as most manufacturers need this information to process under their FREE warranty repair terms.

## New Equipment Warranty Returns

When returning equipment for repair, please pack the item in original packing material or something similar to provide adequate protection during the shipping process. Note on box: "ATTENTION SERVICE." Include a copy of your purchase invoice, and a complete and detailed description of the problems. Without the invoice or a complete description, delays will be experienced in providing the proper service and returning the item to you. Be sure to insure the package for its replacement cost.

HRO will repair or replace the defective item at our option. If the item is found to be defective under the terms of the manufacturer's warranty, no charge will be made for service or return shipping within continental USA. It is the customer's responsibility to ship all defective items to the service center for warranty repair.

## HRO Extended Warranty

HRO now offers an optional Extended Warranty Program for most Amateur Radios, which must be purchased within 30 days of the purchase of the related product. The Extended Warranty Program starts at the conclusion of the new product original warranty period, and must be processed by HRO directly via any of our stores. The Extended Warranty Program can be purchased for one (1) or two (2) additional years, does not apply to accessory items, and is available to the original purchaser only and not transferable. See page 54 for details.

## Support

HRO prides itself in its ability to service the customer. If there is a problem please contact the manager of the store from which you purchased the merchandise. If for some reason your problem cannot be remedied by that store manager, please feel free to call Ham Radio Outlet Corporate Headquarters at (925) 933-1771 and explain the situation. At this point our national sales staff will see that your problem is addressed.

**Thank You for choosing HRO**  
*The World's Largest Ham Outlet*

Serving You From Coast to Coast and Around the World

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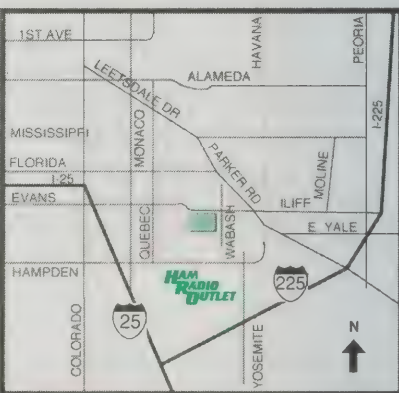
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24 Hour FAX (714) 533-9485

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Jay N0MEU, Robb KC0ZGK  
Eric KC0WOT, Juan K4PY  
Laura KB6UHF  
Jeremiah N0KMO  
Woody W0EAY

## Kaaren Kinzer



With regret we must mention the passing of a key member of the catalog team. In 1984 she created the current format and has been designing it since. Her call was N4GJB. She is a SK on March 7, 2020.

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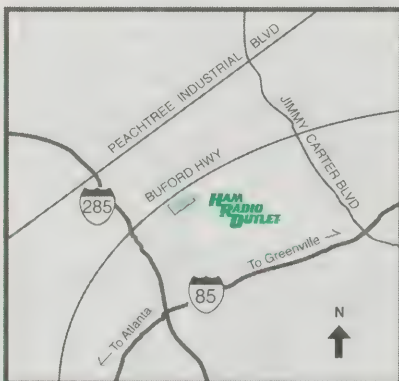
If your closest 800 number is busy, please call one of our other numbers.

Phone Hours: 9:30 am to 5:30 pm Monday – Saturday

**24-Hour FAX Order Lines at all Store Locations**

## 24-Hour FAX Order Numbers

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Atlanta	770-263-9548
Denver	303-745-7394
Milwaukee	414-358-3337
New Castle	302-322-8808
Oakland	510-534-0729
Phoenix	602-395-1244
Plano	972-424-4969
Portland	503-684-0469
Salem	603-898-1041
San Diego	858-560-1705
Woodbridge	703-494-3679



## ATLANTA, GA 30340

6071 Buford Hwy.  
Doraville, 1 mi. north of I-285  
(770) 263-0700  
(800) 444-7927

24 Hour FAX (770) 263-9548

Email: [atlanta@hamradio.com](mailto:atlanta@hamradio.com)

Mark KJ4VO Mgr  
David AI4XL, Denise  
James KK4WNX  
Ray WN5FB  
Koz KD3GC

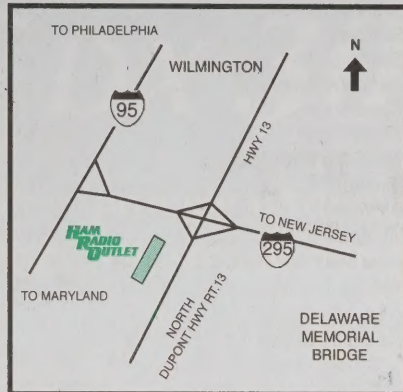
All Stores Open 10am - 5:30pm Monday - Saturday

# STORE LOCATIONS



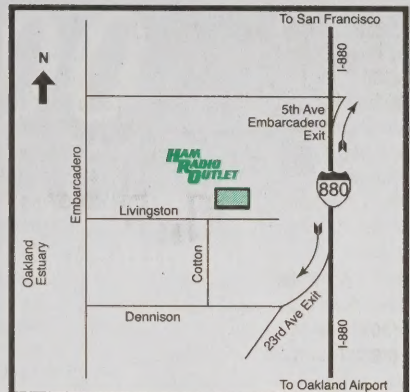
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 (800) 558-0411  
 24 Hour FAX (414) 358-3337  
 Email: milwaukee@hamradio.com

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 Stan KD9AU, Paul W9KHO  
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 Mark AC9DE, Rick W9RAH  
 Gregg W9AWX  
 Howard WA9AXQ  
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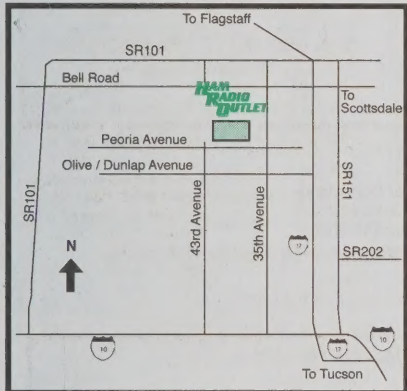
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 Parkway Plaza  
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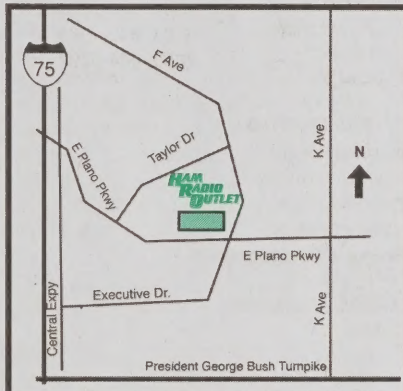
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 (877) 892-1745  
 24 Hour FAX (510) 534-0729  
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 Nick KN6SU  
 Gary KM6MVV  
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 James KE6UOC  
 Jennifer



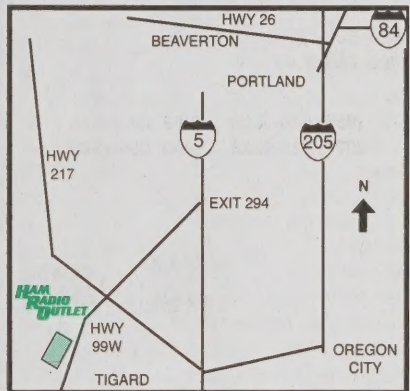
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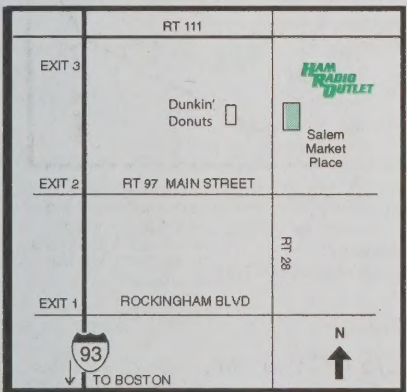
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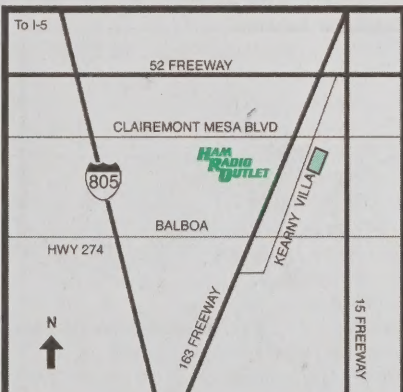
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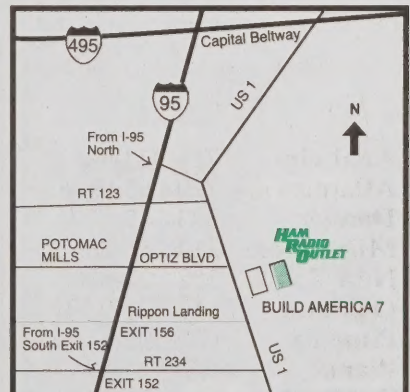
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 Joe K4OHR  
 John KD4REG  
 Rick KE4SKX  
 Cornell KO4YC  
 Nick KK4ODQ  
 Susan

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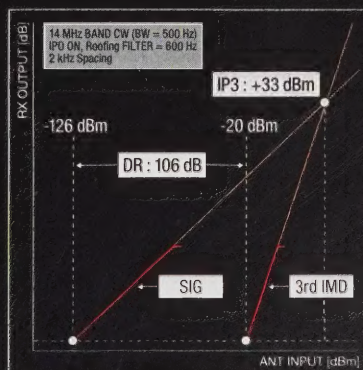
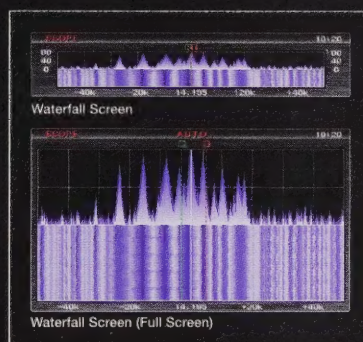
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